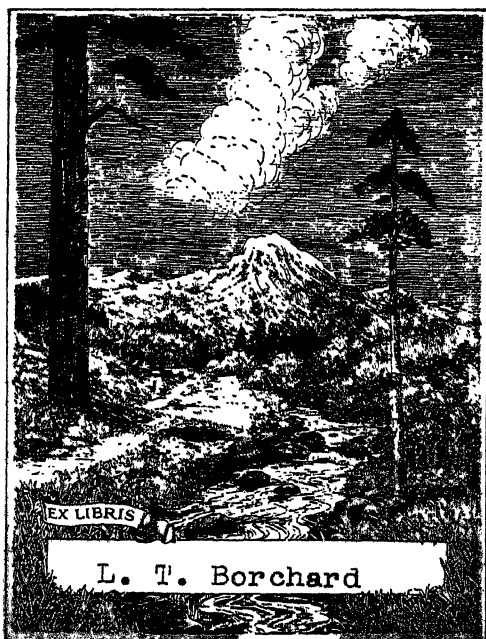


50/2





THE MACMILLAN COMPANY

NEW YORK • BOSTON • CHICAGO
DALLAS • ATLANTA • SAN FRANCISCO

MACMILLAN AND CO., LIMITED

LONDON • BOMBAY • CALCUTTA
MADRAS • MELBOURNE

THE MACMILLAN COMPANY

OF CANADA, LIMITED

TORONTO

OPPORTUNITY IN ALASKA

By GEORGE SUNDBORG

WITH A FOREWORD BY
ERNEST GRUENING
GOVERNOR OF ALASKA

NEW YORK
THE MACMILLAN COMPANY
1946

Copyright, 1945, by
GEORGE SUNDBORG

All rights reserved—no part of this book may be reproduced in any form without permission in writing from the publisher, except by a reviewer who wishes to quote brief passages in connection with a review written for inclusion in magazine or newspaper.

Second Printing

PRINTED IN THE UNITED STATES OF AMERICA
BY THE VAIL-BALLOU PRESS, INC., BINGHAMTON, N. Y.

TO THE PEOPLE OF ALASKA,
PAST, PRESENT, AND—
MOST PARTICULARLY—
FUTURE

FOREWORD

GOLD nuggets are *not* to be found on the streets of Fairbanks. Fortunes cannot be made overnight or in a year or more in Alaska. Jobs in the Territory are not plentiful.

Yet opportunity in Alaska—with its vast area and sparse population—is not lacking: opportunity in Alaska, with its still undeveloped fisheries, forest, mineral, and other resources, its untapped recreational potentialities. Yes, opportunity in Alaska, to a limited extent, awaits those with the pioneer spirit, those equipped with initiative, courage, brains, brawn, patience, persistence—and some capital. Even such opportunities in a large degree depend on development. Alaska's opportunities are primarily potential rather than actual.

Where these opportunities may lie, what fields await the enterprise of the resourceful and otherwise qualified, is well told in these pages, by one who has devoted several years to painstaking examination of the resources of our vast northland. Here is the study for which thousands of Americans, whose thoughts have turned to Alaska, have wished.

Alaska, for over three-quarters of a century under the Stars and Stripes, in the course of its not too well known history has several times been discovered and rediscovered.

Its earliest inhabitants, Eskimos, Aleuts, and Indians—under circumstances shrouded in the mysteries of prehistory—were its first discoverers. Vitus Bering, sailing under the patronage of the Tsar, discovered A-ly-as-ka, "the Great Land," in several stages during the second quarter of the eighteenth century. In the next seventy-five years, Russian, British, Spanish, and French explorers added to the discoveries concerning Alaska. In the eighteen-sixties Secretary of State William H. Seward, discovered Alaska as potential American territory, and its purchase in 1867

followed. Gold seekers rediscovered Alaska in the late eightennineties. The Second World War brought about the latest rediscovery of Alaska.

In consequence of the coming to Alaska in the course of the last four years of several hundred thousand men in the armed forces, Alaska has been rediscovered by newspapers and magazines, by screen and radio. Thousands of the young men who served in Alaska are desirous of returning after the war and settling there. Still other thousands of their comrades-in-arms have the same desire.

Much that has been written and published about Alaska and its potentialities, falls into the field of fancy and fiction. Careful investigation of Alaskan resources is needed to determine how many newcomers the Territory can support adequately. It was with this in view that President Roosevelt, visiting Alaska in August, 1944, indicated on his return to the States that he would set up a study of Alaska as a place to which many veterans of this war might go. In pursuance of the immediate objective of developing Alaska's economy and creating opportunities for those who desire to settle in Alaska, the Territorial Legislature in the spring of 1945 created an Alaska Development Board.

George Sundborg's excellent "Opportunity in Alaska" is therefore timely and valuable. It will furnish the tens of thousands of Americans interested in Alaska's possibilities a background and factual basis for determining whether their desire to go north shall be translated into further inquiry concerning "America's last frontier," and into action.

ERNEST GRUENING

Governor of Alaska

CONTENTS

PART I

WHAT KIND OF COUNTRY IS ALASKA, ANYWAY?

| | |
|---|----|
| WHY ALASKA? | 3 |
| IT'S A PRETTY BIG COUNTRY | 13 |
| THE CLIMATE AND SOME OTHER INTERESTING THINGS | 36 |
| THE PEOPLE | 48 |
| WHAT MAKES ALASKA TICK? | 53 |

PART II

A THOUSAND CAREERS IN TEN CHAPTERS

| | |
|---|-----|
| OPPORTUNITIES IN THE FOREST INDUSTRIES | 67 |
| OPPORTUNITIES IN AGRICULTURE | 76 |
| OPPORTUNITIES IN LIVESTOCK RAISING | 110 |
| OPPORTUNITIES IN THE FISHERIES | 118 |
| OPPORTUNITIES IN MINING | 132 |
| OPPORTUNITIES OUT-OF-DOORS (<i>Trapping, Hunting, Guiding, Fur Farming</i>) | 148 |
| OPPORTUNITIES IN CONSTRUCTION | 153 |
| OPPORTUNITIES IN TRANSPORTATION AND THE TOURIST TRADE | 157 |
| OPPORTUNITIES IN TRADE, SERVICE, AND THE PROFESSIONS | 175 |
| MISCELLANEOUS OPPORTUNITIES | 182 |

PART III

HERE ARE SOME OTHER THINGS YOU'LL WANT TO KNOW

| | |
|---|-----|
| THE PLEASURES AND PAINS OF LIFE IN ALASKA | 191 |
| "RULES AND REGULATIONS" | 212 |
| THE ALASKA COUNTRY MILE BY MILE | 221 |
| A CHAPTER ON NORTHWESTERN CANADA | 271 |
| CLASSIFIED INFORMATION | 278 |
| WHAT TO READ, AND WHERE TO WRITE, FOR FURTHER INFORMATION ABOUT ALASKA | 284 |
| INDEX | 289 |

PART I

WHAT KIND OF COUNTRY IS ALASKA,
ANYWAY?

WHY ALASKA?

MAYBE you said it yourself. "If there's ever another war," you said a few years ago, "I'm going to a nice quiet place like the South Seas—or Alaska—and sit it out." Well, there was another war, and lots of people like yourself went out to the Pacific islands or into the Far North, not to get away from the struggle but to be in the thick of it. One of the large currents of history has carried Americans from Main Street to the ends of the earth, and some of its effects are likely to be pretty far removed, geographically and logically, from its causes. An incidental result of this war which started half a world away in some of the most heavily populated areas of Europe and Asia has been the bringing of underpopulated, almost vacant, Alaska finally into the full consciousness of the American people.

Alaska is now generally known not to be at the end of the earth. It is, in fact, not so very far from Main Street. Many thousands of our countrymen, in and out of uniform, have recently been introduced to the North, a part of the world to which most of them never gave a thought, certainly not a personal one involving such a matter as their own whereabouts. Alaska was not quite a major war front, but in this greatest of world upheavals it was the only part of America to experience actual warfare. Moreover, it is of particular interest to Americans because it is our own country, and our own kind of country. The great Northern construction undertakings of the war years—air fields, army and navy bases, the Canol pipe line and, most spectacular and appealing of all, the Alaska Highway—have centered the attention of the nation on Alaska. The consequences of this fact will beyond a doubt help to write the American history of the years that follow the war.

Most people learn with surprise that this great sub-continent

of Alaska, half again as large as all the Atlantic seaboard States from Maine to Florida, is not only habitable but, in fact, highly attractive; that, although it has been in United States possession for more than three-quarters of a century, still hardly a good beginning has been made in the task of occupying its land and putting to work its resources; that its population has reached a level only of one person to every eight square miles, as compared with forty-four persons for every square mile in the United States; that, moreover, this land in which a man has 350 times as much room to knock around in as does his brother in the States, is not far away and hard to reach, but firmly attached to the North American continent and now connected by highway with the street that runs past every front door in America.

Alaska has been a backward cousin in the American family. It is our oldest Territory. Since its purchase from Russia in 1867, a dozen States have been welcomed into the union. Three of them had not even been organized as Territories when we acquired Alaska. Hawaii and Puerto Rico did not become United States possessions until more than thirty years later. Yet Hawaii now has more than five times, and Puerto Rico more than twenty-five times, as many people as the northern Territory. If the nation had been settled at the leisurely pace which has prevailed in Alaska, our frontier would not yet have reached the Alleghenies. Time—not just the clock and the calendar, but the time that measures the ages—has been standing still in the North.

It is interesting to speculate on the reason why. The backwardness must be blamed on a complex of factors. Certainly one of the most important of these is, or, rather, was, isolation. The men and women who tamed the West moved overland on foot or horseback, or in simple vehicles such as existed on every farm in the last century. But to get to Alaska has always entailed a sea voyage. Besides being a psychological hurdle for a continental people, this meant a substantial cash outlay for passage, before a settler could even have a look at the country to see if it suited him. It meant also a high cost of living in Alaska, delay, a feel-

ing of being far removed from the main currents of American life.

In the past few years two closely related trends, or forces, each one revolutionary in its magnitude and scope, have transformed the position of Alaska from that of a disconnected and remote economic island to that of a keystone in the arch of a land bridge stretching out across the North Pacific between America and Asia. In the years to come, Fairbanks probably will be thought of as more "central" than Kansas City. The first of these two forces has been the remarkable opening up of the North by the airplane, an instrument which wasn't available for pioneering on any other American frontier. The other force, the war itself, has proceeded rapidly and on a broad scale to provide all manner of new connections between Alaska and the States. Whatever it may be in the future, the Territory will not again be isolated.

Now that Alaska is within reasonably easy reach of Americans and their thoughts, development of the type which has characterized the growth of America seems assured. When the people of the nation realize fully, as they just now are beginning to do, what they have in the North, the old order is certain to change. Those who have lived in Alaska a long time realize that an end already has come to a phase in the history of the country, a phase which had a great deal of attraction to it, but one which had to go. Throughout our history there has been something in the American character which has vibrated in response to the appeal of open land, to the challenge of undeveloped country. The pioneer blood still runs strong in the American people, though a generation or more has passed since the final conquest of the West. The urge for wide spaces, the yearning for contact with primeval nature, the stern delight in subduing the wilderness—to say nothing of strong economic and social pressures from the rear—rolled back the map from the Atlantic to the Pacific. Now these same hardy attributes will play a part in rolling it back northward to the Arctic Ocean. Alaska seems as certain of substantial development within the next five or ten years as was the

West at the end of the Civil War, in much the same manner and for many of the same reasons.

Try to visualize America six months after the last shot has been fired in Germany or Japan. Millions of boys have come back men, and have put aside their uniforms. They have returned to the home which all the time they were far away they thought of as the most wonderful place on earth and which they swore they would never leave again. But somehow, now that they've been there long enough to exhaust the vaunted simple pleasures, home doesn't seem quite the same. The old town is smaller and quieter than they remembered it, and the old gang has changed. Life at home has gone on all the while they were away, and goes on yet, in—how should they express it?—in a set and self-centered way they don't fully approve of, now that they have been out in the world. Besides, the old job is pretty dull too, after Africa and France, or India and the Philippines. In short, the personal horizons of millions of young Americans have been widened. The war shook them unwillingly out of a groove into which many of them, for good or ill, will never fit again. The war, which meant loneliness and terror and discomfort and dirt and drudgery and heartache and the loss of personal freedom, did after all contain some other meanings too, now that they look back on it. There was adventure, for instance, and a cause, a big undertaking in which it was always possible to see clearly the beginning and the direction and the end, and of which they were a part. Now, back home, something—and something important—has gone out of life and is missed. Many and many a sober young man is beginning to wonder whether he would not be happier doing something different, in new surroundings and among new people. Preferably it should be something a little out of the ordinary. He would like to make a career for himself in a place, if there is such a place, where all the good opportunities weren't taken up by somebody else a long time ago. Alaska fills this bill, and is certain to possess great appeal for the young veterans of this war.

Then there will be other millions of workers, an industrial

army, inevitably displaced from shipyards, arms factories, airplane plants, war industries of all kinds, large and small. Only yesterday they were turning out the weapons which were needed in fantastic quantity but which suddenly are not needed at all. Careers all over America will be coming to full stop. People with money in the bank will be looking around, not just for something to do, but for lifetime occupations. The war has cut millions of lives in two. People are thinking: "Let's start anew." To many of these, Alaska is bound to have great attraction.

Some thousands of Americans, as has been mentioned, served in construction or under arms in Alaska itself. Not a few will want to remain, or return. For there is something about the North. Explain it how you will, men and women who have once tasted life in that region never seem to be fully satisfied elsewhere. Always there is the old tug northward, as insistent as the turn of the compass needle. Something in the human heart and human soul responds to the appeal of the wilderness, especially the northern wilderness. It is a something which no other appeal can satisfy.

Thus from many sources is springing the basis of a substantial movement of people to Alaska. Is this a good thing or not? Should it be encouraged or discouraged? Some Alaskans would say the Territory has enough people already and is only going to be "spoiled" by any change in the existing order of things. It should be remembered that many of the people who live in Alaska went there precisely because they wanted to get away from civilization, and it is understandable that they should be unhappy, as was Daniel Boone when he could see the smoke from his neighbor's cabin ten miles away, to have civilization pursuing them. Because of limitations which will be pointed out a little later on, however, Alaska probably will never be settled or developed to the degree that there will not be open spaces aplenty for the true recluse.

A more important ingredient of the opposition to development which does exist in Alaska is the unexpressed fear, fortu-

nately of no foundation in most cases, that there will be some diminution of opportunity for those already in Alaska when more people move in. This dog-in-the-manger attitude, of course, is not confined to Alaska. You may even have detected it in the counsels of the Chamber of Commerce of your own home town. It has existed wherever there was progress or the possibility of progress. When all good opportunity is really absorbed, the people on the scene can cease worrying about new competition coming in. It won't. Instead, those with energy and vision begin to move out. So a certain amount of local resistance to newcomers is not a bad sign but a good one. Remember, too, that almost everybody in Alaska is a newcomer, relatively speaking. Only the Indians and the Eskimos have been there a really long time. Someone once went to the trouble of computing the average length of residence of all the white people who ever lived in Alaska, and found it to be about three weeks. At any rate, that's one of the stories that's told in the North. Under such circumstances, it doesn't take very long to qualify as an old settler. Many of the people who will be recognized as the real pioneers of Alaska have not yet appeared on the scene. That is a measure of the true opportunity which exists.

The impression should not be left that new people going to Alaska are not going to find a welcome. Alaskans are among the most outspoken and friendly people on earth. They are largely free from prejudice and want to accept a man on the basis of what he shows himself to be rather than what he, or somebody else, says he was. This ready tolerance and trust are rooted in the same conditions of frontier life which fostered freedom and gave it a new birth in America. Nowhere in the world is there a greater degree of liberty for the individual. Nowhere else, on the other hand, does the country itself set such rigid requirements. As someone recently pointed out, the "law of the Yukon" hasn't been repealed. Only those with stout hearts and keen vision will prosper. But there is room for many such. Just how many, it is impossible to say. Certain it is, however, that an expanding

economy in Alaska will mean a more rewarding life for all, for the old Alaskan as well as for the man or woman whose arrival is more recent. Opportunity is not like a pie of given dimensions, from which can be cut only so many pieces. Opportunity instead depends for its dimensions directly upon the level of activity. Opportunity will increase in proportion to the influx of population.

Turning from the purely Alaska interest to that of the nation, what should our attitude as Americans be toward development in the North? Only a few years ago, we thought what happened in this part of the world didn't matter very much one way or the other. Alaska was a long way off, and in a direction in which the nation was not looking. As recently as 1937, when the President called for the drawing up of as much of a national defense program for the Territory as was thought to be in the public interest, the army, which had a total of twelve officers and 286 enlisted men in the Territory, responded that "there appears at present to be no necessity, from the viewpoint of the national defense, of increasing the military garrison in Alaska," while the navy replied that it was "on record as not in favor of very large appropriations for naval facilities in Alaska." Five years later, while Japanese soldiers squatted on a couple of chunks of Alaska, we were furiously engaged in building in the Territory and adjacent portions of northwestern Canada something like a billion dollars' worth of defense works. In this task, we had to begin from scratch in a virtually uninhabited wilderness which lacked all the essential transportation, communication, and other instruments and social institutions which a developed and stable civilian society would have provided ready for use. While the large expenditures were being questioned in Congress, the nation learned that a sudden artificial graft of security comes at a fearfully high price when a natural growth of security has been neglected through the years.

The fundamental means for the type of security which America must have in the North include not only strong bases and ade-

quate lines of transportation, but a reasonable distribution of population and industry. A properly developed Alaska henceforth will possess new and enhanced importance in any scheme for world security. It cannot be a forgotten land again. The national interest does very clearly demand the development of still unoccupied Alaska, just as the national interest of Russia has required the remarkable strides made in recent years to settle and develop the Soviet Far East, just across Bering Strait from our own northern Territory. One of the lessons of history is that land which is simply held, and not used, is never held for long. Nor does it deserve to be.

All argument about what should be done with Alaska is, however, somewhat academic in view of what has just been done there. Alaska has already been opened up—and with a bang. The war program in the North has left tremendous marks on the country. Things are possible in Alaska today which were unthinkable even five years ago. One of those epic conjunctions of history, technical advance, and social progress makes the development of Alaska a “natural” on America’s post-war program. In the total job of readjusting the national economy to a peacetime basis, Alaska might well assume very considerable proportions. Its substantial development, always inevitable, has been set ahead many years. Opened by the war, the North is going to stay open.

Already, with Alaska still remembered as a military sphere, there is widespread interest in the opportunities which will exist in the North, in peacetime. Many hundreds, if not thousands, of persons already have resolved to go to the Territory just as soon as their personal circumstances will permit. Others are interested, but undecided. They want to know a number of things: what kind of land the Alaska Highway has opened up, whether farm acreage is available for homesteading, what the chances will be for machinists, fishermen, truckers, prospectors, carpenters, hairdressers, newspapermen, teachers, lawyers, doctors, and in many other trades and callings. A surprising number say they intend

to operate roadside enterprises of various kinds along the Alaska Highway.

Much of this interest is ill-informed, but there is no denying it exists in large proportions. Any magazine article about Alaska brings its author and anyone he happens to mention a deluge of letters, mostly from men in the armed forces overseas. Every government agency with responsibilities in the Territory is besieged with eager inquiries. The Division of Territories and Island Possessions of the Department of Interior, for instance, is receiving an average of two hundred letters a month from people interested in going to Alaska after the war. In Alaska towns, the Chambers of Commerce and Rotary Clubs find such letters in every mail. Unfortunately, no government agency, or commercial or civic group, is set up to give completely satisfying answers to these questions. The very volume of inquiries is an embarrassment. The individual pondering a move which will shape his future naturally hopes to have precise and considered information and advice. But on the receiving end, where these letters are arriving by the hundred, there is little chance to give them the careful treatment all earnest inquiries deserve.

The Fairbanks Chamber of Commerce, prompted by the large volume of correspondence of this nature which has developed, recently devised a postcard reply, which goes as follows:

In answer to your inquiry about Fairbanks, Alaska:

1. Pre-war population about 5,000; present population, about 9,000.
2. Housing problem presently acute. Building materials not available.
3. Basic industry, gold mining, suspended during war.
4. Good post-war possibilities in gold mining, agriculture, stock-raising, dairying, increased housing and hotel facilities.
5. Living costs high but will probably be reduced by local production.
6. Probably be opportunity in various services such as auto and airplane.

7. Substantial but seasonal tourist business expected after the war.
8. Aviation activities expected after war to expand substantially.
9. Extent of peacetime development after the war cannot be forecast now.
10. Only persons with pioneer instincts will succeed in Alaska. You would have to adjust yourself to pioneer conditions, be willing and energetic in your work and a good citizen of Alaska, to find your niche here.
11. Further requests should be accompanied with return postage.

FAIRBANKS CHAMBER OF COMMERCE

This is some help, but not as much as the prospective citizen of Alaska would like to have. A dozen additional questions are on the tip of his tongue. This is a serious matter to him. He must know much more—and if he is the type of person who would make good in Alaska, he will know much more—before he decides to move north.

For such earnest people is this book intended. It seeks to present an Alaska point of view, but a progressive one. It tries to stick to the facts and let the reader draw the conclusions. It is thoroughly up to date, written to appraise the opportunities of 1946 and not those of a dead past or a hazy future. It recognizes Alaska as an area of substantial immediate possibilities, which however are by no means unlimited or to be realized by all comers. Finally, it keeps constantly in mind the interest of real men and women who want to make (not just find) useful and satisfying places for themselves on what is America's last great frontier.

If you can see yourself as part of this historic development, which is certain to write an exciting new chapter in the epic of American expansion, this book is for you.

IT'S A PRETTY BIG COUNTRY

THERE is a fable about the trouble a group of blind men had in agreeing on just what kind of beast was the elephant. The man whose groping hands encountered the trunk thought the elephant must be very like a great snake; he who touched the ear described the animal as akin to the skate or ray; another thought from the feel of the side of the beast that it was more in the nature of a rough and high wall; while the blind man whose arms encircled a leg insisted the elephant resembled nothing so much as the trunk of a tree. Even with our eyes open, we are likely to fall into similar error in trying to describe Alaska. Like the elephant, it is large beyond the experience of most of us in judging a region. Also like the elephant, it is almost fantastically diverse, embracing within its borders broad valleys, fiorded seacoast, flat sandy beaches, rugged mountains, rolling hills, tundra, forest, swamp, grassland, ice fields, raging rivers, sluggish streams, lakes, plains, glaciers, meadows of flowers, taiga, cold regions and warm ones, places where it rains virtually all the time and others where rain is almost unknown.

The main body of the Territory measures about 750 miles across each way and lies almost entirely between 141° and 166° west longitude, and 60° and 70° north latitude. This nearly square land mass is "bounded" by the Pacific Ocean on the south, Bering Sea on the west, the Arctic Ocean on the north and the Dominion of Canada on the east. From this very substantial portion of the earth's surface there are important extensions at the two lower "corners"—toward the southeast the rugged mainland and archipelago of Southeast Alaska, on the southwest the somewhat similar land formation of the Alaska Peninsula and Aleutian Islands.

The easternmost extremity of Alaska is at 130° west longitude,

and lies only about seven hundred miles due northwest of Seattle. Now that we are beginning to talk about distances, it is necessary to mention that there are several kinds of miles—statute, nautical, and geographic—which vary considerably in length and which when used interchangeably, as seems often to be done, will lead to endless confusion and contradiction. As used in this book, a mile is the United States statute mile of 5,280 feet, the one with which you are familiar in driving the highways. Sailors and geographers will have to be asked to pardon us for converting their longer miles to the uniform and more familiar symbol.

It may be hard to believe, but should prove helpful to remember, that the greater part of Alaska lies more nearly west than north of the United States. The Territory's westernmost point, as is fairly well known from recent history, is on Attu Island in the Aleutians, clear over in the eastern hemisphere at 173° east longitude, some 2,400 miles from the part of Alaska which lies nearest to Seattle. The Territory is so wide from east to west that it covers three time zones, the first of which is one hour behind Pacific Standard. When it is noon at Nome it is 6 P.M. in New York. By geographic rights, Alaska is entitled to still another zone, and one in which not only the clock but the calendar would change. The International Date Line has to swing several hundred miles out of its way to keep the western Aleutians working on the same day as the rest of Alaska. Attu is due north of Tarawa and New Zealand, though because of the way the earth rounds off toward the poles the comparison is misleading as far as east-and-west *distance* is concerned. Almost as much westing is accomplished in a mile's travel at the latitude of the Aleutians as in two miles' at the equator. Attu is only two hundred miles from the nearest of Russia's Komandorski Islands, which are in fact part of the same sunken mountain chain which forms the Aleutians. Kamchatka Peninsula is 435 miles away and Paramushiro, the Japanese naval base in the Kuriles, about 750. Farther north, the Alaska mainland itself reaches out much closer to Asia, or—to be more exact about it—Asia cooperates by ex-

tending much farther toward Alaska. At its narrowest point, Bering Strait interposes but fifty-six miles of water between the two continents, and squarely in the middle of the strait are the Diomed Islands, Little Diomed on the east belonging to the United States, and Big Diomed, just a few miles distant, being part of the vast domain of the U.S.S.R. In the eyes of geologists Alaska and Asia are not really separated at all, as Bering Sea and Bering Strait are part of a large continental shelf or land body which at the present time is only slightly submerged. Across the actual land bridge which existed there in an earlier age are thought to have come from Asia the forebears of all the aboriginal peoples of the Americas.

The southernmost point in Alaska is not, as is commonly supposed, at the tip of Southeast Alaska nearest to Seattle, but is far out in the Aleutians on Amatignak, a relatively small island between Adak and Amchitka, at $51^{\circ} 30'$ north latitude. The shortest route between Seattle and Tokyo passes well *north* of here. When you learn that this southern edge of the Territory is in exactly the same latitude as London, and a good deal farther south than Berlin, Rotterdam, Copenhagen, or Moscow, you may want to revise your opinion of the far northern location of all of Alaska. However, the Territory's northern tip, Point Barrow at 72° north latitude, is far enough north to suit almost anyone, being only 18° from the pole. It is, except for Boothia Peninsula in Canada's District of Franklin, the most northerly point on the North American continent.

Of more pertinence than these spectacular extremes are the comparative locations of the places in Alaska where development seems most likely to occur in the near future and where the bulk of the Alaska population ultimately will dwell—where you may possibly be living if you settle in the Territory. Ketchikan, in the heart of the richly forested region of Southeast Alaska where pulp mills will be located, is 750 miles by steamship from Seattle and in about the same latitude as Londonderry, Ireland. Juneau, the capital, 250 miles farther north along the steamer track,

corresponds in latitude with Churchill, Manitoba. Haines, the new entrepôt to the Alaska interior from the thousand-mile Inside Passage, compares in latitude with Stockholm, Sweden. Anchorage, probably the largest town in Alaska at the present time, is 1,400 miles airline from Seattle, and a little north of the latitude of Bergen, Norway. Just northeast of Anchorage is the Matanuska Valley, which is in the same north-south position as the Faeroe Islands, while just southeast lies the Kenai Peninsula, in approximately the same latitude as Tallinn, Estonia. Fairbanks, which is growing daily more important as a world transportation center, corresponds with Archangelsk, U.S.S.R., and Kodiak with Aberdeen, Scotland. Umnak Island, where sheep have been producing a rich wool crop for years, is in about the same latitude as Amsterdam, Holland. Dutch Harbor is no farther from the equator than is Punta Arenas, Chile.

Perhaps the best way to visualize the extent of Alaska is to compare it with the United States. If the Territory could be lifted bodily and set down on the area of the globe occupied by the United States, the city of Ketchikan would rest upon the Atlantic Coast in the vicinity of Charleston, South Carolina; Juneau would be located near Knoxville, Tennessee; Cordova would be in the vicinity of St. Louis; Anchorage would be near Kansas City; Fairbanks would be a little south of Minneapolis; Point Barrow would be located on the Canadian border near Lake of the Woods; Nome would be near Denver; Unalaska would be near the southeast corner of New Mexico; Attu would be located on the Pacific Coast north of Los Angeles. The main body of Alaska would cover the States of Illinois, Wisconsin, Minnesota, Missouri, Iowa, Kansas, and the eastern half of Nebraska and the Dakotas.

The total land area of Alaska is 586,400 square miles. This is about one-fifth the size of the United States, or a little more than twice that of Texas. Naturally, within so large an area, conditions of terrain, cover, and climate vary greatly. The character of the country in the coastal section around Juneau differs from that of

the interior valleys near Fairbanks as widely as the Atlantic seaboard differs from the Rocky Mountains (though in very nearly the exactly opposite way); the climate of the Yukon Valley is no more like that of the Aleutian Islands than the climate of Southern California resembles that of northern Minnesota.

One of the amazing geographical facts about Alaska is the extraordinary length of its coastline. According to the most recent calculations of the United States Coast and Geodetic Survey, it stretches for 33,904 miles, which is a good deal farther than around the world. This large total, of course, is due principally to the ruggedly indented character of the mainland and islands which front on the Pacific Ocean. Some sixty per cent of the coastline belongs to Southeast Alaska, which contains only about six per cent of the land area of the Territory. Off the twisting shore, the continental shelf extends far into the Pacific. Between Dixon Entrance and the Shumagin Islands, the 140-fathom line lies offshore an average of fifty miles. South of the Aleutians, however, the ocean floor falls away precipitously, reaching depths of as much as 24,000 feet sixty to seventy miles offshore. Except in its southern and western portion, most of Bering Sea is less than 180 feet deep. The Arctic Ocean is remarkably shallow and practically without tides, in contrast to some of Alaska's other waters. On Cook Inlet below Anchorage the tides are second only to those of the Bay of Fundy in extremes of rise and fall, which amount at times to as much as forty-two feet, when the sea surges through Turnagain Arm, one of the extensions of the inlet, in a "bore" resembling a waterfall. At the heads of some of the long inlets in Southeast Alaska there are extremes between high and low tide of as much as twenty-three feet. Along most of the outer coast, however, the extremes of the Pacific tide are about fifteen feet, though in the Aleutians they are only about six feet, are very irregular, and often occur only once a day. Tides also are irregular in Bering Sea, where they average about nine feet. Changes in the level of the Arctic Ocean are caused mainly by winds, the tide at times having a rise and

fall of only a few inches and at other times not existing at all.

One of the many myths about Alaska, which has been repeated time out of mind and no doubt will continue to be, is that the so-called Japan Current or Kuro-siwo sweeps along the coast and is an important factor in modifying the climate. Investigations long ago disclosed that there is no definite "current" as far eastward in the North Pacific as Alaska, and that the waters which move eastward in rather irregular shallow bands are not of sufficient volume or high enough in temperature to have much, if any, effect on the climate. The idea that there is a Japanese Current in this area probably has its origin in the popular observance of a wind-driven eastward surface movement, which carries to the Alaska shore the bluish-green glass floats of the fishermen, along with other drift materials originating in Japan.

The land in Alaska tips toward its three seacoasts. The Pacific drainage, though facing a very wide sweep of sea, does not include a large area, as the summits of the mountains which flank this coast lie only a few miles back from the ocean. This leaves only a steep coastal slope, amounting to about one-fifth of the area of the Territory, to be drained southward, chiefly through the Copper, Susitna, and Matanuska river systems and the many shorter streams which empty directly upon salt water in South-Central and Southeast Alaska. By far the greatest portion of Alaska, including all the broad interior, is drained westward into Bering Sea, principally by the extensive Yukon and Kuskokwim river systems.

The Yukon is one of the great rivers of the world, being more than two thousand miles long. It rises in the extreme north-western corner of British Columbia, in fact very close to such Southeast Alaska towns as Juneau and Skagway. Flowing north-westward across almost a thousand miles of Yukon Territory and eastern Alaska, it "turns a corner" at Fort Yukon on the Arctic Circle and thereafter trends southwestward to the sea. The Yukon, which is navigated by Mississippi-type stern-wheel river steamboats for its entire length in Alaska, very neatly cuts the

main body of the Territory in two. Although nearly half of Alaska lies north of the Yukon, fully five-sixths of the population resides south of the river. The third and final drainage area of Alaska is the Arctic slope. Though large, this area does not receive sufficient precipitation to develop streams of any great volume. The Colville, Noatak, and Kobuk are its principal rivers. So extensively striated with large rivers is most of Alaska that there is hardly a place in all its vast extent which cannot be reached quite readily from the water during the "open" season when the streams are not frozen.

This is as good a place as any to lay the ghosts of several other myths about Alaska. Despite the fact that they lie far to the north of areas in the central and eastern United States where the freezing of harbors is an annual occurrence, the ports of the Alaska coast south of the Alaska Peninsula are never closed by ice. Of course, they are all salt-water ports, in contrast to those of the Great Lakes and eastern rivers with which they are here rather unfairly compared. Cook Inlet is the only arm of this part of the Pacific which freezes in the winter, and because of its great tides and shallow shore it is not navigated to any great extent even in the summer. Anchorage, located near the head of the inlet, is served almost entirely by railroad rather than by steamship. Bering Sea is closed by ice for from seven to eight months of the year, and Nome is icebound from the end of October to sometime in May, when the first steamer arrives from Seattle to reawaken economic life in that far northwestern port. Often the first ship into Nome encounters difficulties. In 1944 it was sixteen days on the way, spending half of this period in the ice between Dutch Harbor and its destination.

Pack ice is, of course, never absent from the Arctic Ocean, although broad "leads" open up along the shore to permit navigation in the summer. The Arctic Ocean has been coursed across the top of the continent between the Pacific and the Atlantic several times, although ice conditions in these seas are so irregular and uncertain that such voyages frequently require two

seasons, which means spending the long winter frozen into the Arctic ice pack. This is not recommended for beginners. The "icebergs" which sometimes are viewed from the decks of excursion steamers in Southeast Alaska are not an indication that arctic conditions prevail in those waters. They are, of course, chunks of ice which have broken away from some of the many tidewater glaciers of the region and have been carried into the channels. They do not last long in the salt water, and constitute only a negligible hazard to navigation. Most of the large rivers of Alaska, and all those of Interior Alaska, are closed annually through freezing. The Yukon is navigated freely only in the period from June through September. The far-famed Nenana Ice Pool, in which Alaskans wager about \$100,000 annually, is based upon the time of break-up of the ice in the Tanana River, a tributary of the Yukon.

The impression that most of Alaska is a land of ice and snow persists to a certain degree in the United States today, despite a continuous earnest attempt on the part of Alaskans to dispel this erroneous idea. Actually, snow and ice fields cover an area of only about 18,000 square miles, approximately three per cent of the Territory. The winter snowfall over most of Alaska is less than it is in many sections of the United States. The permanent ice fields consist principally of glaciers, which are the product not of an extremely cold climate but of a peculiar combination of factors of terrain and climate, of which high altitude and abundant precipitation are the most important. Glaciers are correctly described as huge rivers of ice. They originate high in the mountains and "flow" toward the sea at the rate of a few feet a day, much too slowly for any motion to be detected except in the changed general aspect over a period of years.

Although always moving downhill, glaciers do not "run out" at their source, since they are constantly being renewed in their upper reaches by new ice formed from snow under pressure. Instead, most glaciers break and melt away at the foot somewhat more rapidly than they move downhill, with the result that the

face of the glacier constantly backs away uphill. Such glaciers are said to be "receding." This is part of the retreat of the Ice Age, which still goes on in a few parts of the world. Some glaciers in Alaska are receding quite rapidly, although this too is a movement measured only in feet per year. At the time of the early settlement of Juneau, some of the older Indians claimed to remember when Mendenhall Glacier discharged directly into salt water. The glacier now lies more than four miles back from the sea. To the disappointment of most people who see them for the first time, many glaciers are "dirty" and are covered with a litter of rocks, some to such an extent that it is impossible to tell where the adjoining hillside leaves off and the glacier begins. The long stripe of such materials running down the center of most glaciers is called a medial moraine. Glaciers also have lateral (at the sides) and terminal (at the face) moraines.

A glacier in Alaska is a thrilling sight, due to its very great size, the relentless inevitability of its movement and the ghostly blue color of the ice, which varies in hue according to the lighting. A glacier is one of the remarkable manifestations of nature's majesty and purpose before which man can only stand in awe. Many of the glaciers of Alaska discharge directly into salt water, and these are the most spectacular. Those which have retreated inland create milky glacial rivers. At their feet, some of the Alaska glaciers are more than 750 feet thick in solid ice. There are few glaciers in the northern and truly cold portions of Alaska, and these few are comparatively small. The great glaciers are found along the southern coast or in the high mountains of the interior. And, of course, quite respectable glaciers exist in the United States. One of our National Parks is named in honor of this fact. We do not, because of that, consider Montana a "land of ice and snow."

The ice myth, as regards Alaska, probably had its origin in the political debates in Congress and in the press in 1867, when a well organized opposition, by ridiculing Alaska as a frozen land, very nearly upset Secretary Seward's \$7,200,000 deal with Russia

to purchase the Territory. Such popular misconceptions die hard. It is likely that Alaska will be quite generally supposed to be an unmitigated icebox for a long time to come. Dr. Alfred H. Brooks, first Director of the Alaska Section of the United States Geological Survey, once pointed an interesting parallel:

It will be well to recall that many of the early opinions of the value of eastern America were unfavorable. The desperate struggle for life that was experienced by many of the first settlers on the Atlantic seaboard by no means convinced Europeans that the new land was suitable for settlement by the white race. The experience of the pioneers of the St. Lawrence, Massachusetts, Jamestown, and the Gulf of Mexico have raised serious doubts whether North America included anything but a tropical fever-stricken zone to the south and a barren polar zone to the north. This pessimism about the value of the Atlantic seaboard, exhibiting the ignorance of three centuries ago, suggests some of the present opinions on Alaska.

The judgment of Dr. Brooks as to the relative attractiveness of Alaska as a place to live is expressed strikingly as follows:

Had the Pilgrim fathers settled at Sitka, Alaska, instead of at Plymouth, they would have found a milder climate, better soil and timber, and more game, furs, and fish. Indeed, pioneer life in southeastern Alaska was so much easier than that on the New England coast, the question might seriously be raised whether the hardy enterprise of Puritan stock would have been developed under these more favorable conditions.

For most modern American stomachs, however, Alaska will prove to be sufficiently strong fare. It is good country, but by no means easy country, and anyone under the impression that it is had better not give it a try. Resources there are in abundance, but as someone has said, they were scattered by the Lord over such a big country that they tend to run pretty thin in spots.

Far from being a barren and icebound land, the part of Alaska which Dr. Brooks compared with New England is so lushly

covered with big trees and tangled undergrowth that it is all but impossible to travel on foot through the wilderness. The jungle-like growth is a product of the climate, which causes green things to spring in even the least likely places. Seeing the Southeast Alaska forest for the first time, while en route to make his classic explorations on the Yukon in 1883, Lieutenant Frederick Schwatka was greatly impressed with one common sight.

Even the Indians' tall, dead "totem poles" of hemlock or spruce, which would make fine kindling wood anywhere else, bear huge clumps of dripping moss and foliage on their tops, at heights varying from ten to thirty feet above the ground. An occasional stray seed of a Sitka spruce may get caught in this elevated tangle, and make its home there just as well as if it were on the ground. It sprouts, and as its branches run up in the air, the roots crawl down the totem pole until the ground is reached, when they bury themselves in it, and send up fresh sustenance to the trunk and limbs, which until then have been living a parasitic sort of life off the decayed moss. Imagine a city boy tossing a walnut from a fourth story window, and its lodging on the top of a telegraph pole, there sprouting next spring, and in the course of a couple of years extending its roots down the pole, insinuating themselves in the crevices and splitting it open, then piercing the pavement; the tree continuing to grow for years until the boy, as a man, can reach out from his window and pick walnuts every fall, and the idea seems incredible; and yet the equivalent occurs quite often in the southeastern portions of our distant colony.

For something like 1,400 miles Alaska has a common land frontier with Canada. From the Arctic Ocean, the boundary runs due south along the 141st meridian almost to the Pacific; then it staggers off to the southeast along the summit of the Coast Range, reaching the sea finally by way of Portland Canal and Dixon Entrance. Neither the Portland nor any of the other "canals" of Alaska is man-made. These are natural sea channels in the Inside Passage system of connected waterways, called canals because of their straightness, narrowness, and usefulness to man. The long, straight surveyor's line of the boundary in the north separates

continental Alaska from the Yukon Territory; the irregular limit veering from summit to summit farther south divides Southeast Alaska from British Columbia and the extreme southwestern corner of Yukon Territory. British Columbia is a Province, which is very roughly the Canadian equivalent of a State. The Yukon is a Territory, governed very largely from Ottawa, as our Territory of Alaska is governed from Washington (although even more so). Yukon Territory is even less well developed and has fewer people than Alaska. It was to the western part of this purely Canadian area that the great Gold Rush of 1897-98 headed. Dawson and the Klondike are not in Alaska, and never were.

Geographically, Southeast Alaska, known as the Panhandle, is not part of the large peninsular land mass of Alaska, but is the coastal section of northern British Columbia. We came by it honestly, by reason of the early Russian settlements along this coast, to whose rights we fell heir with the Alaska Purchase of 1867. The exact location of the boundary was established by arbitration some years later. The narrow neck of land connecting the Southeast Alaska mainland with the rest of Alaska is sheathed by a very large glacier and ice cap, which will never in our time permit a practical connection, such as a road, to be built across it. Utilizing the more favorable Canadian terrain lying farther inland, however, a new road connects the Southeast Alaska port of Haines with the Alaska Highway and thence with the Alaska interior. Many people believe that this will be one of the busiest routes of access to the country, and Haines has been experiencing something of a speculative boom.

Dependence upon Canada for some of the connections between portions of Alaska is not a practical obstacle to progress in the Territory. The relationship is one of mutual interdependence. The Canadians must cross Alaska areas in order to reach sections of northern British Columbia and the Yukon Territory, and have done so ever since Gold Rush days without friction of any kind. Recent loose talk about the possibility of Canada's

"selling" us a corner of Yukon Territory and British Columbia so that we could have an all-United States route between the two sections of Alaska is indulged in by people who don't know very much about Canadians, or about the people of our own North, for that matter. Even if it were possible politically, such a transaction would be without practical utility. Our whole history of friendly relations with the Dominion is surety that the road through this wild section will always be open to our use. Canada recently set this corner aside for a future national park. It is an area of transcending natural beauty and contains Mount Logan, the highest mountain in all Canada.

There is a very close identity of aims between the people of Canada and the United States in the development of this northern country, one which has been emphasized by such recent cooperative undertakings as the construction of the Alaska Highway and Canol pipe line, the maintenance of the Northwest Staging Route and the wresting of the Aleutian Islands from the Japanese. Truly, in the North as elsewhere, our long common boundary may separate, but it does not divide, the people of the United States and Canada.

The "lay of the land" in Alaska can best be comprehended in its relationship to a larger Canadian-Alaskan natural province, which through recent more or less formal designation by the two nations has come to be known as the North Pacific region. This is the broad, untamed shoulder of the continent extending northwestward toward Asia from the more highly civilized areas of Puget Sound and central Alberta. All the major physical features of this region trend from southeast to northwest, providing in their valleys, trenches, and waterways natural means of access from the heart of the continent. A cross section of the region at any point would show first, on the east, the narrowing northern reach of the Great Plains, which extend unbroken from the Gulf of Mexico to the Beaufort Sea; next the Rocky Mountain system, and at its western foothills the remarkable physiographic feature known as the Rocky Mountain Trench; then a tumbled and

broken cordillera, and finally the Coast Range, sloping swiftly to the sea. Flanking the mainland along the entire Pacific Coast north of Puget Sound is a chain of overlapping large islands furnishing protection from the sea for the water route which is called the Inside Passage.

Like the Rocky Mountain Trench, which it exactly parallels, the Inside Passage leads straight and true for more than a thousand miles from the United States Pacific Northwest, through Canadian territory to the newly unfolding greater international Northwest about which we have been speaking. This protected water route has been in use for centuries. Captain Vancouver, like the Spanish, Russian, and French explorers before him, passed through portions of it, in 1792, in a small sailing vessel. Through it again, a hundred years later, surged the stampede to the Klondike. Through it today flows the commerce of Alaska, British Columbia, and the Yukon. Almost every rock along the shore or under the surface could tell a story of shipwreck or narrow escape, although long ago a track was evolved which was free of all danger even for the largest ships, and word of which was passed along from pilot to pilot. As one modern writer puts it, "In those early days an Alaska pilot was truly not a mariner who knew where the rocks were but one who knew where they were not." Even today most pilots keep to this tried and true channel, lining up their vessels on ancient landmarks, often with a mark both ahead and astern, which might be a peak, a point of land, a prominent tree, a bald spot in the vegetation, or even an old landslide so covered with second-growth timber that only the keen eye of a veteran will distinguish it. The Inside Passage, by reason of its relative straightness, uniform width, and great beauty, is one of the natural wonders of the world, and never fails to thrill the traveler, whether he is seeing it for the first time or the five hundredth.

The Rocky Mountain Trench, following exactly the same tangent 250 miles inland, is another such wonder, though as a modern transportation route it has yet to be developed. If the

Japanese had not been turned back at Midway and in the Aleutians, there is little doubt that there would by now have been a military railroad running through the trench from Prince George, British Columbia, to Fairbanks. The route was carefully surveyed by the army, including an extension to Port Clarence on Bering Sea, but the plans have been put away, due to the favorable change in the military situation, until after the war. Beginning at Flathead Lake in western Montana, the Rocky Mountain Trench heads unswervingly for the Yukon. So straight is it that when a 500-mile section was surveyed by the British Columbia Department of Lands, the trench nowhere ran off a map of ordinary width, although the sheet was about sixty feet long. In its entire length the floor of the trench does not vary more than 1,000 feet in altitude. This natural phenomenon is the product of a geological fault, a great shearing break which occurred while the Rockies were being thrust upward. In its geologic youth, the long valley was V-shaped, but glaciers and rivers scoured out the sides and laid down alluvial deposits which left it a flat floor from five to ten miles wide. This trench is rivaled by only one other in the world, that which extends from the Sea of Galilee, down the River Jordan, across the Dead Sea and the Red Sea, and along the Nile into the heart of Africa. The trench through which the children of Israel wandered is longer, but not nearly so straight and well defined as this in western Canada.

Through the Rocky Mountain Trench lies the "B" highway route recommended by the British Columbia-Yukon-Alaska Highway Commission, which is the Canadian counterpart of the Alaskan International Highway Commission. The United States group recommended construction of a highway to Alaska along what is known as the "A" route, which lies between the "B" route and the coast. There the matter stood until, under the pressure of urgent military necessity, the United States Army built the present Alaska Highway, not on either the "A" or "B" route but well to the east of both. This road, known at first as the Alcan Highway, later as the Alaska Military Highway, and at present

simply and officially as the Alaska Highway, followed a chain of airports already established northwestward from Edmonton by the Canadian Government. The airway, which continues through Alaska into Asia, is called the Northwest Staging Route. Over it have flown thousands of airplanes to our Russian allies. The highway skirts the eastern foothills of the Rockies until at about latitude 60° it utilizes a break between this range and the Mackenzie Mountains to turn westward past Watson Lake and Whitehorse to Alaska.

The mountains of Alaska are in general northward—and somewhat grander—extensions of the mountain ranges of the United States and Canada. The Brooks Range, which separates the Arctic drainage from that of the Yukon, is considered by some geologists to be a continuation of the Rocky Mountains, while others think it may form part of an Arctic series. The Alaska Range, with the St. Elias Range, somewhat out of line, constitutes an extension of the Cascade chain, and continues westward to form the spine of the Alaska Peninsula and the disconnected vertebrae of the Aleutian Islands, though here again there is a difference of opinion, and some geologists hold that the peninsula and island heights are a distinct series. The Coast Range of Alaska is indisputably a continuation of the Coast Range of California, Oregon, Washington, and British Columbia. As this range is followed northward, its mountains become higher and closer to the sea. Timber line becomes lower and the vegetation slightly less luxuriant and dense, while some species, such as notably the Douglas fir, drop out entirely. For the most part, however, Southeast and South-Central Alaska look very much like the Puget Sound country.

At the apex of the Alaska Range, and dominating the broad lowlands of the Tanana and Kuskokwim rivers, stands Mount McKinley, the highest point of land in North America. Its peak is 20,300 feet high. Rising as it does from a comparatively low and level plain, the mountain is a spectacular geographic feature, said to be the tallest mountain in the world in point of elevation

above its own immediate base. It is visible from Fairbanks as well as from the Alaska coast at the head of Cook Inlet. McKinley has been scaled successfully only four or five times, most recently by an army expedition. Mount Foraker, which flanks it, has been climbed only once, and a multitude of lesser peaks in the same general vicinity remain unnamed and unexplored. Mount McKinley is the central attraction of Mount McKinley National Park, which was established in 1917 and is administered in the same manner as national parks in the States, although the annual number of visitors has always been very small. The park is reached by the Alaska Railroad and lies about two-thirds of the way between the coast and Fairbanks. One proposal for post-war consideration is that the present detached Mount McKinley road system of ninety miles be connected with the Alaska Highway by 155 miles of new construction, so that visitors to the North may motor directly to the park.

To call the roll of the principal mountain peaks of Alaska which are higher than any mountain in the States is to realize what a broad-gage country this is. These include:

| | <i>feet</i> | | <i>feet</i> |
|-----------|-------------|--------------|-------------|
| McKinley | 20,300 | Vancouver | 15,700 |
| St. Elias | 18,008 | Quincy Adams | 15,360 |
| Foraker | 17,000 | Fairweather | 15,300 |
| Bona | 16,420 | Hunter | 14,960 |
| Sanford | 16,206 | Hubbard | 14,950 |
| Blackburn | 16,140 | Bear | 14,850 |

The highest mountain in the United States proper is Mount Whitney in California, 14,495 feet. Only Asia and South America have higher mountains than Alaska. Many of the mountain peaks of Alaska are volcanic, the highest ones in this category being Wrangell, 14,005 feet; Spurr, 11,050; Iliamna, 10,085; Redoubt, 10,200. The Alaska Peninsula has ten volcanoes, including Pogromni, Shishaldin, Veniaminof, Popof (the name is only unintentionally descriptive, being like most of the others Russian

in origin) and Katmai, which are active from time to time. The Aleutian Islands contain many more.

The dense forest cover which mantles Southeast and South-Central Alaska consists chiefly of western hemlock and Sitka spruce, with a small proportion of such species as western red cedar, Alaska yellow cedar, cottonwood, and lodgepole pine. This forest is limited to areas below an elevation of 2,500 feet. That this altitude generally lies only from one-half to two miles back from the shore speaks volumes about the precipitous character of this section of the Alaska coast. Despite its occurrence in such a narrow belt, this is very definitely a commercial stand, and one of the last vast untouched stands of good timber remaining in the world. The volume of commercial timber in Southeast Alaska alone is estimated at eighty billion board feet. In addition to this coast forest, Alaska contains over a very broad area in its central valleys an interior forest of open parklike woodlands, the chief species being black spruce, white spruce, tamarack (also called larch) and Alaska white birch. Although of limited commercial value, this forest has considerable utility for local purposes.

No forest cover exists north of the foothills of the Brooks Range or westward of a line which could be described from Norton Sound through Bethel to the base of the Alaska Peninsula. The Aleutians, as is pretty generally known, are treeless. The unforested sections of Alaska are covered with either grass or what is known as tundra. The principal grass-land areas are the Alaska Peninsula, Kodiak Island, and the Aleutian Islands. If you are thinking seriously about Alaska, "tundra" is a good word to add to your vocabulary. It describes level or rolling plains, often rocky, carpeted with low-growing vegetation, but the particular plants making up the carpet vary widely, and may consist in one area of small shrubs, perennials, and annual plants, including grasses, while in another the grasses and small herbaceous vegetation may be present and the shrubs missing. One fairly consistent ingredient of tundra wherever it is found is the

lichen known as "reindeer moss." The large river flats, including those of the Yukon and Kuskokwim, have extensive growths of grasses and willows, but this cover is not tundra, strictly speaking. Another common type of treeless region, especially on the Alaska Peninsula, is the "niggerhead," which looks innocent enough when viewed from a distance but is exceedingly difficult to walk over, because of the tussocks of grass standing in solid masses a foot or more above the surrounding barren ground. The higher mountain regions, of course, support no vegetative cover of any kind. Also completely barren are some interesting sea-level areas recently uncovered by glaciers, although in some of these may be seen the battered stumps of large pre-glacial or inter-glacial trees. Vegetation will ultimately claim this at-present sterile and lifeless area. Most of the open country of Alaska is bright with wildflowers in spring and summer. The variety of this flora may be judged from the fact that 449 species are listed in the first published sections of a work in progress at Iowa State College by Dr. J. P. Anderson, Alaska botanist and longtime resident, who estimates that about twice that many more remain to be covered.

Closely associated with these cover types, and controlled by the same factors of climate and topography, is the varied fauna of Alaska. Big game, particularly the bear and moose for which the Territory is famous, is found in most of the timbered regions. The large and dangerous brown bear occurs notably on Admiralty Island in Southeast Alaska and on Kodiak Island and the Alaska Peninsula. The smaller and gentler black bear is more numerous and of very wide distribution. Grizzlies roam the broad interior. Glacier bears are found only along the southern coast, and polar bears only along the northern. Kenai Peninsula has the largest specimens and the heaviest concentration of moose, although they are widely distributed elsewhere. Like the bear, the moose grows larger in Alaska than anywhere else in the world. Mountain sheep and goats are found in the higher altitudes, the sheep mostly in the Alaska and Brooks ranges and the goats in the mountains lying nearer to the coast.

Most numerous of the Alaska big-game animals is the caribou, which ranges widely over the interior. The reindeer, a relative, is not native to Alaska, but was imported from Asia. It is a semi-domesticated animal which is herded on the open range. You would do well not to be caught treating the reindeer as if it were a game animal. Southeast Alaska has a small but delectable Sitka deer, which does not occur naturally in other sections of the Territory. Snowshoe rabbits and Arctic hares are abundant. Fur-bearers are widely distributed, forming the basis for Alaska's third most important industry, which will be discussed at length later on. Important waterfowl breeding grounds exist on the shores of the Arctic Ocean and Bering Sea, and duck hunting is good in most parts of Alaska. Of the upland game birds, the ptarmigan and grouse are the most important.

One of the formerly abundant Alaska mammals, the musk ox, was exterminated about seventy-five years ago, as a result of indiscriminate killing of these rather stupid animals on the open Arctic plains by the crews of whaling vessels. A small band of musk oxen was reintroduced from Greenland a few years ago, and is growing. Buffalo and elk also have been introduced successfully. All these species are being afforded careful protection, for the time being, to permit them to establish themselves firmly. Certain upland game birds from Asia have also been introduced in the past few years.

Alaska has no snakes. Apparently the climate does not agree with them. It does have wolves, big ones which do extensive damage to wild and domestic animals. However, you need not stay awake nights worrying about them. Relatively few of the people of Alaska have so much as seen a wolf. Apparently the very low opinion we entertain for them is generously reciprocated by the wolves who, being on the introvert side, react by keeping as far away from human beings as they can. For many years Alaska has had laws offering generous bounties for wolves and coyotes, and at present is offering \$20 and \$17.50, respectively, for these animals, but this is not easy money to come by and no one gets

rich at it. According to the best technical information, there is no such thing as a "wolf pack," at any rate not in Alaska. They come singly or in small family groups, if at all.

Many of the songbirds common to the northern United States are native to Alaska as well. Eagles are seen everywhere, even soaring above the largest towns, despite their not being afforded the protection given them in the States as the national bird. In fact they are suspected of various high and low crimes, and until a few years ago a bounty of \$1 was paid by the Territory for each set of claws. Until recently, the tails of Dolly Varden trout were also worth 2½ cents apiece in bounty, but the generous distribution of public largess for such grisly tokens has been discontinued, at least for the time being. A bounty of \$3 is still paid for the nose of a hair seal. The Legislature usually appropriates around \$135,000 each biennium to pay wolf, coyote, and seal bounties.

One unreconstructed pest all too common in Alaska, and on which no bounty is paid, is the mosquito. This nuisance does not exist to any unusual degree along the coast, but across the mountains in the interior they make days miserable and nights hideous. Fortunately the mosquito season is brief, lasting in full fury only through June and July. Mosquitoes are reputed worst in wilderness areas where their damp breeding grounds have never been disturbed, but they are big and bold and bad and numerous enough, goodness knows, even on the main street of any town in the interior. Some effective means of control probably will be devised some day and applied in this area, though the vast extent of the mosquito country is a discouraging thing to think about. Head nets and gloves are fairly effective palliatives, and lots of people are bearing up under this difficulty with no ill effects. But the mosquito in Interior Alaska is a force to be reckoned with, and should not be underestimated. They have been known to kill even the giant brown bear. During the height of the mosquito season every living creature that can deserts the floor of the valleys, leaving the mosquitoes undisputed masters

there. In the words of one of the early explorers of the Yukon Valley: "According to the general terms of the survival of the fittest and the growth of muscles the most used to the detriment of others, a band of cattle inhabiting this district in the far future would be all tail and no body, unless the mosquitoes should experience a change of numbers."

Hunters have complained of not being able to get a fair shot at game, not altogether because of the ravenous attacks upon the face and eyes, but because the mosquitoes were actually so dense that it was impossible to see clearly through the mass in taking aim. I have found it impossible in places to get good photographs of some subjects in the interior because a few mosquitoes always managed to get in the foreground of the lens. The theory that these Alaska mosquitoes are able to get through a mosquito bar by two of them holding the legs and wings of another flat against its body, while a third shoves it through, has been pretty well discredited. The existence of cooperation among them is doubted; they are just too mean to help one another. They will come through a bar with relative ease whenever they are so thick on it as to constantly touch one another, however, probably because such contact makes them more than ordinarily furious, so that they put out extra effort in order to squeeze through. For further mosquito stories, you are referred to the boys who built the Alaska Highway. There is also a large fly, somewhat resembling the horsefly but much larger and inflicting a bite proportionately more severe. And of course there are small gnats which sail right through a head net or mosquito bar without even bothering to crawl.

Hay fever sufferers may breathe freely in Alaska. Pollen count tests show that the Territory is virtually free from ragweed pollen, chief cause of hay fever, and of most other windborne pollens. Slides exposed all one summer at Nome, Fairbanks, and Juneau did not capture as many "significant" particles as are frequently found on a single 24-hour slide in the agricultural areas of the States.

Well, after all that, just what kind of country is Alaska? The answer depends entirely on what part of the Territory you're talking about. Alaska has all things—or nearly all. To be of much help, a description of the Territory has to be broken down into a series of descriptions of separate regions. This is done in the later chapter called "The Alaska Country Mile by Mile." Meanwhile, on to some other matters of more general interest.

THE CLIMATE AND SOME OTHER INTERESTING THINGS

BUT isn't Alaska a pretty cold place in which to expect human beings to live?

In general, no; it isn't so cold as you think. An exact answer depends again on what part of Alaska is under discussion. The climate of the Territory is fully as difficult to describe as the climate of the United States. Alaska doesn't have a climate; it has climates. Ketchikan has an average rainfall of 150 inches a year and has seen the temperature go down to zero only twice in the past twenty years. Fairbanks has less than twelve inches of annual rainfall but has recorded winter temperatures of 60° below, and even colder. The mercury climbs as high as 100° on the Yukon River at the Arctic Circle in midsummer, but 275 miles down the river, in a more "southerly clime," it plunges as low as 76° below in midwinter. Sitka has had only four zero temperatures in 150 years, while at Point Barrow there are 170 days every year, on the average, when the temperature is zero or lower. The growing season ranges in length from an average of 160 days in Southeast Alaska to only eighty or ninety in the Tanana and Yukon valleys, while many places of greater elevation in Alaska do not have any growing season at all; freezing temperatures are reported every month of the year.

Nearly three-fourths of Alaska is in the North Temperate Zone. The climate along the southern seaboard is actually less severe, winter and summer, than that of Boston, New York, Washington, or St. Louis. And even in the coldest parts of the interior, the air is so still that the winter cold is less oppressive or damaging to animals and humans than the blizzards of Wyoming, Montana, and Alberta. Latitude has much less influence on climate than such factors as position relative to ocean

bodies, direction of prevailing air currents, "continentality," and elevation. The isotherms generally parallel the seacoast rather than the equator. Out of this arrangement, coastal Alaska gets a more equitable climate than interior United States.

Three general climatic provinces are recognized in Alaska. First, there is the southern coastal region, with cool summers, warm winters, and considerable rainfall. Next, the interior has long cold winters, short warm summers and fairly light rainfall. Finally, the Arctic zone, the only part of the Territory with the kind of climate Alaska is "supposed" to have, has still longer cold winters, short summers, and very slight precipitation.

The Southern Coast

The relatively warm waters of the Pacific Ocean adjacent to coastal Alaska, and the warm, moisture-laden sub-tropical mass of air that drifts northwesterly onto these lands, together produce the peculiar climate characteristic of the region. Mixing of this warm air with a cooler air mass lying over Bering Sea gives the Aleutian Islands the fog and wind for which this area is widely and unfavorably known. South-Central and Southeast Alaska owe their heavy precipitation to chilling of the warm, moist Pacific air masses by the high mountains near the coast. Southeast Alaska is, on the whole, the rainiest part of the Territory and, in fact, of North America, though it is far surpassed in this respect by many tropic areas. The wettest station in Alaska is Little Port Walter, at the southern tip of Baranof Island, where the annual mean precipitation is 231 inches, almost twenty feet. It does not rain quite so often here, though, as at the little station of Radioville, near Juneau, where the average number of days each year with measurable precipitation is 262. Juneau records an average of 84 inches in 221 rainy days a year; Ketchikan 150 inches in 236 days of measurable rainfall; Sitka 87 inches, 216 days; Yakutat, 131 inches, 190 days.

But even in the matter of rainfall Southeast Alaska reports some startling deviations. Skagway has only twenty-six inches of

rainfall a year, thanks to its location in the "rain shadow" of the Chilkat Range; these mountains rob the Pacific clouds of their moist burden before they drift over the upper Lynn Canal area. At sea level, almost none of the precipitation is in the form of snow, although heavy snows occur at higher elevations.

Even when it is not raining in Southeast Alaska it is more often than not overcast. At Juneau, normally 72 per cent of the days of the year are cloudy and only 16 per cent clear, with the rest falling in between. Ketchikan reports 63 per cent cloudy and 24 clear; Sitka, 58 cloudy, 19 clear; Skagway, 51 cloudy, 30 clear; Yakutat, 59 per cent cloudy, 25 per cent clear. The driest and clearest months are May, June, and July, although periods of more than three days without rain are almost unknown at any season. The annual mean temperature in Southeast Alaska ranges from 40° to 45°. In the warmest month (July) the mean maximum temperature ranges from 58° to 66°, depending on location. In the coldest month (January) the range of mean minimums is somewhat greater, from 18° at Skagway to about 30° at Ketchikan, the average temperature at this season comparing with that of central Maryland, southern Illinois, and southern Kansas. The coldest temperature ever recorded at Juneau was 15° below; Ketchikan, 8° below; Sitka, 5° below; Skagway, 22° below, and Yakutat, 3° above zero. Growing season ranges from 111 days at Skagway to 172 at Juneau.

The climate of South-Central Alaska is very much like that of the Southeast section, with most localities having a little less rainfall, slightly colder winter temperature, and a little higher percentage of clear days. Cordova, with 148 inches of annual rainfall, is one very wet place in this area, followed by Valdez with sixty, but in locations farther back from the Pacific, Anchorage has less than fifteen inches, Copper Center only nine, Matanuska fifteen and Homer thirty-three. The Alaska record for the heaviest single day's precipitation belongs to Cordova, where more than ten inches of rain fell in one soggy twenty-four-hour stretch in 1927. The days are a little colder in winter and

warmer in summer than in Southeast Alaska, typical extremes being those of Anchorage, 36° below zero and 84° above. At Anchorage the temperature stays below 32° from November to March. Farther westward, winters are warmer and summers cooler, while rainfall is sixty-two inches at Kodiak, fifty-nine at Dutch Harbor and seventy-four at Attu. Alaska Peninsula and the Aleutian Islands are subject to cold gales from Bering Sea and warmer ones off the North Pacific. Fog is almost constant in the Aleutians, and sudden and violent storms occur frequently. The temperature doesn't vary greatly, either seasonally or between night and day.

Bering Sea is a cold body of water, cut off from circulation with the much warmer Pacific by the Aleutian chain and Alaska Peninsula. Fog, rain, wind, and violent storms characterize this northern sea at all seasons. The climate of the Alaska coast adjoining Bering Sea and the Arctic Ocean is very different, and very much more severe than along the southern coast. On Bering Sea the mean summer temperatures range between 45° and 54° , and the mean annual between 22° and 37° . Precipitation is about twenty-eight inches at St. Paul Island, twelve inches at St. Michael, and eighteen inches at Nome. St. Paul Island has a smaller percentage of clear days, seven, and a larger of cloudy, seventy-three, than any other station in Alaska.

The Interior

In the interior, relatively little rainfall but very great extremes in temperature, especially at the lower end of the thermometer, are the rule. The climate is decidedly continental in type. The mean annual temperature at Fairbanks is 26° , varying from an average of 60° in July to 11° below zero in January. Lowest temperature on record is 66° below zero, the highest 99° above—a mark which was reached in July of 1944. The temperature averages zero or below for 238 days of the year, the freeze being constant from October to April. The growing season between frosts in spring and fall varies greatly according to location, and

especially elevation, but at Fairbanks is ninety-six days, from May 24 to August 28. The Tanana and Yukon valleys have an extreme annual temperature range of as much as 165 degrees, being the coldest part of Alaska in winter and the warmest in summer. Temperature range in a single winter month may be as much as ninety degrees. The coldest temperature ever recorded at a regular weather station in Alaska was 76° below zero at Tanana, the highest 100° at Fort Yukon.

The mercury drops lower in Alaska than it does anywhere in the States, but winter weather is characterized by an almost total absence of wind, which makes the cold bearable. The mean monthly temperature exceeds 50° for the months of June, July, and August. Annual precipitation ranges from eight to sixteen inches, with about half of it occurring during the growing season. Summer precipitation is sometimes accompanied by mild thunderstorms. Average snowfall at Fairbanks is forty-nine inches. About half the days of the year are cloudy, with the other half equally divided between those in the clear and the partly-cloudy categories. At Big Delta in the Tanana Valley, only thirteen per cent of the days are cloudy. At Circle Hot Springs in the Upper Yukon Valley, forty-four per cent of the days are clear. These two places are the Alaska "champions" in the respects mentioned. In the lower Yukon and Kuskokwim valleys precipitation ranges from fifteen to about twenty inches. Average summer temperatures range between 52° and 55°, and those of winter between 8° below and 10° above.

Although the winters in the interior are cold, they are by no means unbearable, as is evidenced by the fact that the population is not confined to a few hardy men mining gold in summer and hibernating in winter, but consists of families who live there in comfort the year round. Outdoor operations are restricted in winter, but the usual activities of town and village life go on as usual. A few years ago, a virtually unanimous vote in favor of winter as the best time of year was recorded in a poll among children in the Fairbanks schools.

The Arctic Coast

On the Arctic coast the average annual range of temperature is from 18° below zero in January to about 40° above in July. This region has long, cold winters, with the greatest number of sub-zero days of any area in Alaska. Precipitation averages less than five inches a year. At Barrow it is about four inches. Contrary to the general impression, the snowfall along the Arctic coast is less than in any other part of Alaska, although snow may fall in any month of the year. The average annual snowfall is about forty inches. Driven by the wind, this snow packs in drifts of almost incredible solidity. Barrow has continuous daylight for about 80 days in May, June, and July, though near the beginning and end of this period the elevation of the sun is so low and its rays fall with so much slant that their heating power on level surfaces is greatly reduced. Despite the long period of low temperatures, the extremes of cold on the Arctic coast are not so great as in the interior valleys much farther south. The coldest temperature ever recorded at Barrow, -56° , compares with -76° at Tanana. Barrow's highest-ever temperature was 78° .

A table giving weather statistics for a number of places in Alaska will be found under "Classified Information" in the back part of the book.

Thunderstorms, while not unknown, are neither frequent nor violent in Alaska.

Although it has never received the study or comment it deserves, there appears to be a very close correlation between latitude and the time of year in which the heaviest rainfall occurs. Instead of peak precipitation occurring in the fall or winter, as is the case along the Pacific Coast in the States, the agricultural areas of Alaska receive most of their rainfall in August or September, during the growing season—a great advantage. The way the month of peak rainfall advances through the year as higher latitudes are attained is illustrated by the following selected list of localities, arranged in order from south to north:

| <i>Place</i> | <i>Nearest Degree of Latitude</i> | <i>Month of Peak Precipitation</i> |
|-------------------|---------------------------------------|--|
| Red Bluff, Calif. | 40 | January |
| Roseburg, Ore. | 43 | December |
| Seattle, Wash. | 48 | November |
| Juneau, Alaska | 58 | October |
| Valdez, “ | 61 | September |
| Fairbanks, “ | 65 | August |
| Barrow, “ | 71 | July |

Another climatic factor benefiting agriculture and almost every other activity in the North is the great length of the summer day. Over the course of the year, every place on the earth's surface has roughly the same number of hours of possible sunlight. At the equator the sun is above the horizon twelve hours every day of the year, not varying more than eight minutes from this schedule. The North Pole and the South Pole, on the other hand, have continuous daylight for a period in summer and continuous darkness for a shorter time in winter, with total sunlight and total darkness nicely balanced over the course of the year. Places like Alaska lying nearer to one of the poles than to the equator enjoy very long days in summer and correspondingly short ones in winter. Because nights are so short in summertime, the air and ground do not cool off sufficiently between sunset and sunrise to permit killing frosts to occur. Repeatedly through the early and late summer, just before an early morning critical frost point is reached, the sun comes up over the horizon to save the situation. This gives places in Alaska a considerably longer growing season than many regions lying much farther south.

At Fairbanks the sun is above the horizon from 4 A.M. to 9:30 P.M. on May 1, from 2:30 A.M. to 10 P.M. on June 1, from 1:30 A.M. to 10:30 P.M. on July 1, and from 2 A.M. to 10 P.M. on August 1. During June and July and parts of May and August twilight is continuous throughout the short night. Fairbanks has a midnight baseball game as part of its Fourth of July celebration.

Farther north at Barrow the sun does not set at all for 80 days in summer, and does not rise for seventy-two days in the winter. The long summer day is in effect even in such southern Alaska places as Juneau, where on June 21 the sun rises at 3:51 A.M. and does not set until 10:08 P.M., and there is no real darkness in the summertime. The Matanuska Valley has about seven hours of sunlight daily in December, but fourteen in April, seventeen in May, and practically no darkness from mid-June to mid-July. Throughout Alaska south of the Arctic Circle, the sun in summer rises early well north of east and sets late well north of west, while in the wintertime it comes up late far south of east, describes a flat arc in the southern sky, and sets early well south of west.

A comparison in the length of day between Fairbanks and even so northerly a United States city as Minneapolis is interesting:

| <i>On the First Day Of:</i> | Hours and Minutes Between Sunrise and Sunset at: | |
|---------------------------------|--|--------------------|
| | <i>Fairbanks</i> | <i>Minneapolis</i> |
| January | 4:03 | 8:50 |
| February | 7:23 | 9:45 |
| March | 10:15 | 11:06 |
| April | 13:32 | 12:43 |
| May | 16:55 | 14:13 |
| June | 20:35 | 15:21 |
| July | 21:58 | 15:34 |
| August | 18:20 | 14:44 |
| September | 14:46 | 13:19 |
| October | 11:27 | 11:47 |
| November | 8:00 | 10:13 |
| December | 4:54 | 9:03 |

Though many people elsewhere might think the continuous daylight would interfere with their sleep in summer, I have never heard anybody in Alaska complain of this. In fact, the long day is definitely one of the attractions of the North, and Alaskans enjoy

it and make the most of it. In the wintertime they live a different kind of life, and one in which the long nights are no great disadvantage. Out of your own experience in the United States, you know that most people who have had experience with both types of climate prefer to live in parts of the country where there are definite seasons to relieve the monotony of the year.

A table in the back of the book shows the number of hours of possible sunshine throughout the year at various latitudes in Alaska.

One notable effect of climate in Alaska is the frozen-soil condition which prevails over much of the Territory. This "permafrost" extends over most of the interior as well as Seward Peninsula and the Arctic Slope. It does not occur, however, anywhere along the Pacific Coast of Alaska, and is present only to a small degree in the Matanuska and Susitna valleys, where the surface freezes in winter to a depth of from four to six feet. The Copper River Valley has a good deal of permanently frozen ground, especially along the foothills and slopes of the Alaska Range. The Russians know much more about permafrost than we do, although we are catching up fast. The effects of this phenomenon on construction, agriculture, and many other activities are decisive, and not always unfavorable, as might be expected.

Farmers in the Tanana Valley, for instance, derive a very definite advantage from the fact that an impervious layer of permanently frozen subsoil prohibits the draining away of precipitation and, in its own seasonal melting, actually releases considerable ground moisture which benefits plant roots in the summertime. Normally, the undisturbed ground thaws annually to a depth of from eighteen to twenty-four inches, but when land is cleared and brought under cultivation, the thaw penetrates much deeper, as much as eight or ten feet on south slopes.

The actual period in which plants thrive has been found in Alaska to exceed in many places the "frost-free growing season" as defined in the climatological summaries. A temperature of

32° does not necessarily, or even usually, constitute a killing frost. The degree of cold required to kill a plant depends upon a combination of factors, including duration of the period of low temperature, the humidity of the air and ground, and the hardiness of the particular plant. At the agricultural experiment station at College, near Fairbanks, a study was made each year from 1921 to 1937 of the dates when tender garden plants and field crops were actually killed by frost. The average number of days in the growing season over this period was 105 for tender plants and 123 for field crops. This compares with the eighty-five days reported by the Weather Bureau as the "frost-free growing season" for this station.

The aurora borealis or "northern lights" is a common night sight in Alaska. It occurs in many forms and colors, and never fails to impress the beholder. While there are numerous theories as to the origin of the auroral display, it is generally believed to be an electric discharge occurring in the upper atmosphere 50 to 175 miles above the earth's surface, caused by a bombardment of particles from the sun. It is seen most often in the North (or in the Antarctic, where it is known as the aurora australis) because the earth, being a great magnet, deflects the electrified particles toward its poles. Northern lights are observed much more frequently over the interior than over Southeast Alaska, due to the more northerly latitude and the lesser degree of cloudiness. Early autumn and early spring are the times of greatest frequency. In special auroral observations made in the winter of 1931-32 at the University of Alaska, auroras were seen on 195 nights out of 267, despite the fact that cloudiness prevented observations on fifty-five nights. During only seventeen nights when the visibility was good were no auroral displays observed. During the same 267-night period, only nineteen auroras were observed in Juneau.

Another heavenly phenomenon of the North, not so well known as the midnight sun and northern lights, is the display of "sun-dogs" or parhelia. Although it occurs in several variations, this consists usually of the apparent presence of smaller suns

very plainly marked on either side of the standard sun. It is a fairly frequent Arctic phenomenon, especially in winter and especially when the sun is in the west.

People talk about the weather just as much and with just as little result in Alaska as anywhere else. The climate, especially the rhythm of the seasons, is an important matter in the Territory, where so much of the economic activity is seasonal. The time the ice breaks on the great rivers is significant, quite apart from its answering the question of who wins the Nenana Ice Pool. Spring means a quickening of activity all through the North, with men straining to get in prodigious licks of work in the long days before winter returns. All of the main industries of Alaska—fishing, mining, trapping, logging, transportation, farming, construction, and the tourist business—are attuned very closely to the seasons.

Any old-timer will tell you that the weather in Alaska isn't so cold, or hot, or rainy, or dry, or snowy as once it was. The Weather Bureau, having only its stuffy old records to go on, insists the weather is pretty much the same as ever. There are, of course, relatively "open" winters and some very cold ones, as well as rainy summers to contrast with those which are unusually dry. Everyone seems to agree that the winter of 1942-43, when thousands of Cheechakos were in the country working on the Alaska Highway and other projects, was a humdinger. Southeast Alaska had so much rain in the summers of 1938 and 1939 as to require a substantial upward revision of the annual average precipitation figure for most stations. Little Port Walter in 1938 had 264.53 inches of rain, an all-time, all-Alaska record.

It would not be fair to close this discussion without mentioning that many people find the persistent rainfall and overcast of Southeast Alaska somewhat depressing. Whether there is any actual physical hazard involved is doubtful. According to the Territorial Department of Health, "There is no reason why people living in the wet, coastal climate of Alaska should not be perfectly healthy if they are fortified by eating the necessary

vitamin-giving foods." People expect it to rain, and always go prepared for it. Houses are constructed to withstand the moisture. The ground is steep and drainage good, so floods are rare. Maybe it is only because of the contrast, but nothing could be more delightful than a clear day in Southeast Alaska. The sky is bluer than you ever saw it, so that people who take color photographs are always being accused by their friends "outside" of improperly exposing the film or using a trick filter. The mountainsides are a lively, lovely green; the snow peaks pure white; the sea sparkles like deep-cut zircon; everything is antiseptically clean; and life is very, very good. These days come on an average of about six a month and are spread quite evenly through the year. They compensate for a possible superfluity of rain. Some people wouldn't want their weather any other way.

THE PEOPLE

"Why, the people look just like the folks back home!" has been the surprised exclamation of many a tourist as the excursion steamer edged up to the dock in the first Alaska port. With good reason: the average Alaskan is a transplanted Westerner. The census statistics show he is more likely to have been born in the State of Washington than anywhere else, including Alaska. Less than fifteen per cent of the white people living in Alaska were born there. Many are natives of California or Oregon, with fewer and fewer Alaskans claiming birthplaces as the roll of States is called from west to east. The number of foreign-born in the white population of Alaska was twenty-two per cent in 1940, compared with about nine per cent in the United States. Twice as many of the foreign-born come from Norway as from any other country. Canada and Sweden tie for second place, while lesser numbers come from the British Isles, Finland, Germany, Denmark, Russia, and other nations. The northern European and Canadian background of the majority of these people is one of the principal reasons for their success and contentment in Alaska. They know how to live in the North and make use of northern resources.

There were only 72,524 people in Alaska in 1940. How many there may be now is anybody's guess. Leaving out of account servicemen and others assigned only temporarily in connection with war activities, there are probably fewer people in the Territory than at the time of the last census. Virtual stoppage of the second most important industry, gold mining, was in itself responsible for a substantial exodus, and many other of Alaska's activities have been affected adversely by the war. World War I caused Alaska's population to drop off by about 10,000, and even by 1930 this loss had been only half regained. This time, of

course, Alaska has seen a good deal of war activity, which has counterbalanced to a certain extent the population losses due to interruption of normal pursuits. This time, too, Alaska is certain to come back faster and very much stronger, for reasons which have already been discussed. Throughout the years, the population trend, as far as whites are concerned, probably has been more erratic in Alaska than in any other region of equal size.

The reference to "whites" which has been made several times may be puzzling to some readers. It is evidence of the sharply marked bi-racial character of the population. About half the people of Alaska are aborigines—Indians, Eskimos, or Aleuts—the large class which is lumped under the word "Native" in the Alaska vocabulary. Natives actually outnumbered whites as late as 1930. In 1940 there were 39,170 whites and 32,458 natives. The number of natives has been increasing consistently since 1910. How many there were before the coming of the white man is a matter of speculation, but estimates range from twice to four times the present number. Diseases brought by the whites cut deeply into the native population for many generations. The evidence now is that these people have developed the natural immunity which will permit their numbers to continue to increase in the future.

The native population consists of three quite distinct racial groups. Most numerous (15,576) is the Eskimo, inhabiting the coasts of Bering Sea and the Arctic Ocean, and seldom seen elsewhere in Alaska. The second group, the Aleut, lives on the Aleutian Islands, the Pribilofs, along the Alaska Peninsula and on Kodiak Island. These people have a considerable admixture of white blood, which goes back to the time of Russian occupation. In 1940 there were 5,599 Aleuts. Finally, there are 11,283 Indians, most of them consisting of the coastal language groups—Tlingit, Tsimshian, and Haida—who live in Southeast Alaska, and the remainder being Athapaskans of the interior, who are related to the mountain and plains tribes of the United States.

There were only 141 Negroes in Alaska at the time of the last

census. Other non-whites included 403 Filipinos, 263 Japanese, and 56 Chinese. There is no evidence that disloyal Japanese were "planted" in Alaska for sabotage or espionage purposes. In fact the number of Japanese in the Territory has shown a decline each census period since 1910, when 913 were listed. All Japanese in Alaska were taken into custody following the attack on Pearl Harbor. More than half of them were citizens.

Speaking again of the white population, Alaska has always been very decidedly a "man's country." Although progress toward a more normal balance between the sexes has been reflected with every census tabulation, in 1940 men still outnumbered women almost two to one. This is all the more remarkable in view of the fact that the number of males in the lower age brackets is far below normal. The man's country is actually a middle-aged or even an elderly man's land. It has been computed that a segment of the United States population with exactly as many males aged twenty-five and over as were enumerated in Alaska in 1940 would contain in all about 68,000 persons. In other words, economic activity sufficient to support a white population of 68,000 (which would mean a total Alaska population of 100,000) already exists in the Territory if only the portions of society composed of women, children, students, etc., were properly grouped about the principal wage-earning element.

Less than half the white males in Alaska fifteen years of age and over are married, but three-fourths of the women in the same age group are. Of white women aged twenty or over in Alaska in 1940, nine out of ten either were or had been married. Truly, Alaska is the happy hunting ground for designing females, and women who will become good wives and the mothers of families are an outstanding need of the Territory. Because the Alaska birth rate is far below that required for a stable population, continued migration of new people is needed to keep the total from declining. This abnormal state of affairs is characteristic of frontier areas during the period of early development and settlement. It has persisted in Alaska beyond its allotted time. What

Alaska needs is the family type of society which exists in every dynamic self-perpetuating American community.

Generalizations regarding Alaska's population need always to be qualified in recognition of the constant migration, both seasonal and long-term, which goes on. A seasonal trek of 15,000 to 20,000 fishery and mine workers takes place northward in the spring and southward in the fall. The "population" of Alaska depends largely on the season of the year in which the count is taken. In addition, there is a very large turnover in white population from decade to decade. To return to an Alaska community after a few years' absence is to encounter more new faces than old ones. Even people born in Alaska are very prone to go elsewhere, as is illustrated by the fact that of 10,595 Alaska-born whites counted throughout the nation and its possessions in the 1930 census only 4,353 were then living in Alaska. More were living in Washington, Oregon, and California than in the Territory.

More than half of the total white population of Alaska in 1940 lived in the ten main towns of Juneau, Ketchikan, Anchorage, Fairbanks, Sitka, Nome, Petersburg, Wrangell, Seward, and Cordova. In fact, about forty per cent lived in Juneau, Ketchikan, Anchorage, and Fairbanks alone. Despite this very high degree of urbanization, there are only eight places in Alaska with a population of a thousand or more, and only thirty-four with three hundred or more. This in an area one-fifth the size of the 48 States! Alaska is virtually vacant.

The very separation of the discussion of Alaska's people under "white" and "native" headings connotes a human problem of profound importance and difficulty. Here are two groups of people, many of them living in the same towns of Southeast or southwestern Alaska, yet moving in different psychic and social worlds. Small as it is, Alaska's population is sharply split into a dominant white and a depressed native group. Peacetime development which seems inevitable after the war should give Alaska a substantial preponderance of white people, but the

natives will remain an important segment of the population. Any program of Alaska development begins with this as one important premise. In a democracy, the native must advance from his present very unsatisfactory state; and it is the responsibility of the white man, who took his country away from him, to see that he shares fully in the forward march of Alaska toward a better life for all its people.

You can't help but like the average Alaskan. He carries Western friendliness one degree farther. In order to survive in the hard days of pioneering a new land, men had to help one another. Much of this spirit survives in the Territory. Away from the cities, no good Alaskan locks his cabin door. He leaves it open to the push of the cold and weary traveler, with kindling ready in the stove and food in the larder. The unwritten law in such areas is: Use what you need, and leave an equal opportunity to the next fellow. There are surprisingly few abuses of this code, even as Alaska becomes more highly civilized.

The average Alaskan is practically indistinguishable from the average American, because he reads the same books and magazines, hears the same radio programs, sees the same movies. He is interested in the same international and national problems and in similar local problems. With abundant time for reading and thinking he is surprisingly well informed. The average Alaskan does not give the impression of being a member of a race apart, but is the kind of man you are accustomed to meeting every day in your American home town. He will respect and like you if you give him reason. If you are an average American, Alaska presents no problems of intellectual and social atmosphere with which you will not be able to cope.

WHAT MAKES ALASKA TICK?

THE great land which is now known as Alaska was not discovered by white men until the middle of the eighteenth century. Its remoteness from the centers of European settlement and from the lines of trade and travel left it one of the last regions of the world to yield to the advances of the explorer and settler. At a time when the colonies of the North Atlantic coast of America numbered millions of prosperous people, already preparing to take independent rank among the nations of the world, the very existence of the great northwestern peninsula of the American continent was unknown. Its discovery came finally, in 1741, not from the east as had the conquest of the rest of the continent, but as the farthest reach of the Russians in exploring Asia and its adjacent waters. After about half a century in which all the Alaska coast was probed by their ships, the Russians embarked on an aggressive policy of colonization and exploitation, and established settlements at Sitka, Cook Inlet, Kodiak, and along the Aleutian chain. Their principal interest was in the furs which the fur seal and sea otter of Russian America produced abundantly for the court of the Czar. This activity was never a great financial success, however, and by the middle of the nineteenth century St. Petersburg had begun to tire of its far eastern adventure. The evidence is that the Russians were much more interested to sell, than the Americans were to buy, when Alaska changed hands in 1867 for \$7,200,000, almost all of which went to satisfy debts incurred at the Russian capital by Alaskan enterprises.

Attracted first by the fur trade, Yankee ships began to call at Sitka in the 1790's. In 1848 the first American whaling vessel passed through Bering Strait; it did so well that in the next season 154 American whalers followed its example, all making great

catches and establishing the first important American industry in Alaska waters. American interest in this part of the world was heightened in 1864 when the Western Union Telegraph Company, doubting the practicability of a cable under the Atlantic, spent more than \$3 million surveying a telegraph line which would have reached Europe by way of Alaska and Siberia. The attention attracted to Alaska and its resources by this ill-starred enterprise is largely responsible for Secretary Seward's interest which led to the purchase.

Our early record in Alaska is not one in which Americans can take much pride. Within a week after the transfer ceremonies at Sitka, several new stores were erected and two saloons, two bowling alleys, and a restaurant were in operation. All sorts and conditions of men began to flock to the new possession which, lacking any organized government, fell into a state of disorder and confusion which lasted for many years. Difficulties with the Indians became so serious that the residents of Sitka had to appeal for protection to the commander of a British warship which happened to be in the harbor. Not until seventeen years after the purchase was a Territorial Government established and a Civil Governor appointed. It is a question what the early American inhabitants of Alaska did to support themselves. The fur business remained of small magnitude, whaling declined as petroleum replaced whale oil and steel supplanted whalebone, the fisheries were neglected, and the mineral wealth of the country was as yet unknown. Mostly, the adventurers in such places as Sitka lived off one another, with the devil taking the hindmost.

As late as 1890, fully half of the natural wealth which had been utilized under American occupancy of Alaska consisted of fur-seal skins. The value of these exported in twenty-three years totaled \$33,000,000, while other furs aggregated \$16,000,000 and all other products of the Territory only \$14,000,000. In 1870 the Government had granted the Alaska Commercial Company an exclusive right for twenty years to kill fur seals on the Pribilof

Islands, and had sent a fleet of revenue cutters to Bering Sea in an attempt to enforce the monopoly. Serious complications resulted, including virtual warfare with foreign vessels, until by the fur-seal convention of 1911 all the nations which had been engaging in sealing in this part of the world agreed to abandon pelagic sealing in return for a share of the profits of the Pribilof operations. The sea otter early passed from the picture as an important source of furs, and has not to this day come back very strongly from the condition of virtual extinction to which it was reduced by Russian exploitation. Land furs have been utilized increasingly. Today the fur trade is the third most important economic activity in Alaska, although it lags far behind fishing and mining. The average annual value of fur products from Alaska is about \$2,500,000, of which roughly one-fifth is represented by fur-seal skins.

Codfish was the first of Alaska's fishery resources to be exploited in an important way, the value of exports of this species between 1868 and 1890 amounting to about \$3,000,000. Starting in a very small way in 1878, the canned-salmon industry made such strides that by 1890 it had turned out nearly \$7,000,000 worth of fish. From two in 1878, the the number of canneries increased to six in 1883, sixteen in 1888, thirty-five in 1890, fifty-five in 1904, one hundred in 1916, and a record of 156 in 1929. In the first year of operations, only a little more than 8,000 cases of fish were packed, but this jumped past the 100,000 mark in 1886, the 500,000 level in 1893, the million-case mark in 1899; it reached a peak of more than 8,000,000 cases in 1936. In the past decade, the Alaska canned-salmon pack has averaged a little over 6,000,000 cases a year, worth about \$40,000,000. In addition, Alaska produces about a million dollars' worth of cured salmon and about \$750,000 in fresh or frozen salmon each year. Halibut fishing, which began in Alaska waters as early as 1879, now is a million-dollar industry. Herring furnish about a million dollars' worth of oil, \$500,000 in cured fish, and a like amount in meal.

Shellfish—clams, crabs, and shrimp—are good for another \$500,000 annually.

Second to the fisheries in the Alaska economy is mining, gold being by far the most important of the minerals from a production and employment standpoint. Some mining was being done near Sitka as early as 1877, and by 1881 development had started on the Juneau and Treadwell mines. Gold was discovered on the Yukon in 1883, at Fortymile Creek in 1886, on tributaries of the Sixtymile in 1892, and at Circle City in 1893. But it was not until the rich discoveries of 1897 on the Klondike River across the border in western Canada that Alaska became a mecca for gold-seekers.

The Klondike rush was followed two years later by a stampede to Nome. Strikes in the Tanana and Innoko-Iditarod regions came soon thereafter, and Alaska was well launched on a period of gold production. In minerals alone, Alaska produced more than a hundred times its purchase price in the sixty years from 1880 to 1940. Gold represented a little more than two-thirds, and copper slightly over one-fourth of this total of \$831,000,000. All the other minerals, including silver, coal, lead, tin, platinum, mercury, antimony, limestone, and marble, accounted for less than five per cent of the total. In an average year of the immediate pre-war period, gold production amounted to about \$20,000,000, while all the other minerals together represented a value of only about a million. Though public attention had been focused in spectacular fashion on the coal deposits of Alaska for several years, practically no mining was done until 1917. Large sums had been spent on survey and development of the Matanuska and Bering River fields when withdrawal of all Alaska coal lands put an end to activities there. Total Alaska coal output to the end of 1939 was about 2,500,000 tons, all of which went for local purposes.

Commerce records are searched in vain for any Alaska exports of manufactures or agricultural products. About \$40,000 worth

of wool from the Umnak flocks goes to the States each year. Normally, exports of forest products amount to about \$100,000. Reindeer meat has not been exported for a number of years, and such other activities as copper mining, whaling, and marble quarrying had been discontinued even before the war. Although Alaska has no export agriculture and probably never will have any, food production for the Alaska market is a pursuit of growing importance. Other Alaska industries serving primarily a market within the Territory include lumber, shingle and tie mills, box factories, coal mines, dairies, a wire-netting factory (whose product is used in fish traps), the transportation and tourist business and a wide range of trade, service, and professional occupations. Another large "invisible" economic pursuit in Alaska is government. Ownership of some ninety-nine per cent of the area of the Territory resides still in the Federal Government, necessitating the stationing of many Federal employees throughout Alaska.

The economy in its present state of development is a very simple one based almost entirely on two extractive industries, salmon canning and gold mining, which together account for some eighty per cent by value of the total production of the Territory. Such rigid dependence on so narrow a range of activities is a serious weakness, and whenever, for one reason or another, one or both of the main industries cannot operate at full capacity, Alaska suffers very hard times indeed.

A poor run of fish is a major disaster. Closing of the gold mines, as during the recent war, throws the entire Alaska economy out of gear. The very fact that one of the two major industries is based on the production of a commodity which nobody really needs and whose value is set by fiat is a further unfavorable circumstance. Always Alaska faces the threat that the price of gold may drop or—what amounts to exactly the same thing—that wages, supplies, and other costs of mining may go up. A "gold depression" of this kind was suffered in Alaska from 1918

until production was stimulated again by the reduction of the gold content of the dollar in 1933, which had the effect of raising the price of gold from \$20.67 to \$35 per fine ounce.

In the report which accompanied the second Alaska census in 1890, the enumerator, Ivan Petrov, was moved to say:

In this survey of the wealth and resources of Alaska the observer is struck with one rather discouraging feature: that all these vast resources, the products of land and sea, are taken out of the country without leaving any equivalent to the inhabitants. The chief industries, such as salmon canneries, cod fisheries, mines, and the fur trade, are carried on with labor imported into Alaska and taken away again, thus taking out of the country the wages earned. Every pound of subsistence for these laborers, as well as all of the clothing they use, is carried by them into Alaska. The shipping of Alaska, which has become of considerable value, is also carried on wholly by non-residents of the Territory, and this state of affairs extends even to the important tourists' travel to the southeastern district. . . . The spectacle of so vast a tract of country being thus drained continually for twenty-three years without receiving anything to speak of in return, cannot probably be equaled in any other part of the United States and perhaps of the world.

Half a century later, addressing the Alaska Legislature, Governor Ernest Gruening included in his 1941 message these words:

It must be clear that today still far too much survives in Alaska of the earlier practice of take-it-all-out, take-it-down-below, leave-as-little-as-possible, spend-nothing-in-Alaska. Indeed, the most serious defect in our Alaska economic and social structure is just that. Too much going out. Not enough staying here. This is not said in any critical spirit. It is the natural consequence of conditions which existed and which to a considerable degree have persisted. Absenteeism is a natural product of circumstances which surrounded the earlier history of a territory which freely offered to the world for the taking vast stores of natural resources in earth and sea. We like to boast in retrospect how wise old Bill Seward was and how in exchange for the \$7,200,000 he paid for this Territory, it has poured two billion dol-

lars' worth of fisheries, minerals, and furs into the nation's economy. Quite true. It was a wonderful buy. Alaska *has* enriched the nation. But it has done relatively little for itself. The time has come when an increasing proportion of that wealth should be kept in Alaska for the further development, progress, and improvement of Alaska and the Alaskans.

In 1940, the last full year before the United States entered the war, Alaska shipped to the States commodities valued at \$59,000,000 and received goods valued at \$48,000,000; ordinarily the "balance" of out-shipments is even greater. Over the ten years of the 1930's, shipments to Alaska made up thirty-seven per cent of the total trade and consisted principally of food products, clothing, building materials, machinery, and manufactured articles. A revealing comment on life in Alaska is furnished by the commerce records which show the three leading specific commodity in-shipments to Alaska to be tin cans, gasoline, and whiskey. Whiskey shipments since repeal have amounted to more than two gallons a year for every man, woman and child in Alaska.

Even in its present retarded state of development, Alaska is one of the most important markets for United States products. There are only about ten countries in the world with which the nation before the war did more trading than with Alaska. In the 1931-40 decade the trade of the United States with this sparsely populated Territory was greater, for instance, than that with Norway and Sweden combined, with all of Central America (not including Mexico), with Australia or with Soviet Russia. Almost all the Territory's trade passes through the port of Seattle, which quite properly calls itself "the gateway to Alaska." In terms of tonnage, the Seattle-Alaska trade in the typical year of 1936 was just about equal to the trade between Seattle and all the foreign countries in the world combined. In terms of dollars, due to the high value of such Alaska products as gold, salmon, and fur, it was much larger.

Besides dominating the economy of Alaska, canned salmon and gold impose a pattern of seasonal variation, marked by ex-

treme fluctuations, upon that economy. This is reflected in the export trade: average monthly shipments of gold during the 1930's varied from 84,765 ounces troy in October, at the end of the "clean-up" season in the placer mines, to 16,619 ounces in February; for canned salmon the average monthly shipment in that decade ranged from 136,833,129 pounds in August to a mere 720,769 pounds in January. The seasonal unevenness of the Alaska economy is further heightened by other important activities, such as the tourist business, other mining besides gold, the halibut, herring, and other fishing, that are concentrated in the summer months. Virtually alone among the economic pursuits of the Territory, fur trapping is exclusively a winter occupation.

No one who lives in Alaska requires a calendar to remind him of the time of year. An Alaska Rip Van Winkle, awakened from a long sleep, would be able to tell the season, almost to the day, from the activity of the people around him. Like the bear, the Alaska economy hibernates in the winter and gathers strength for the busy summer season ahead. The coming of spring is speculated upon, and many thousands of dollars are wagered on the exact day, hour, and minute when the ice will leave the rivers. In April the halibut fishing begins. The lonely watchmen at the big salmon cannery sites bestir themselves and begin to look for the tenders to arrive with men and materials to put the plants in shape for the rush season. The waterways buoy a steadily increasing traffic of tenders, scows, barges, pile-drivers and other floating appurtenances of the fishing industry. Loggers get out poles and piling for fish traps, dolphins, and floats. The steamship lines increase their schedules to accommodate the swelling north-bound traffic. In the placer mining districts, stripping and thawing are stepped up, while the dredges are readied for operation.

Just as the first tourists begin to appear on the streets of Alaska towns, the fishing season gets under way in the districts farthest west: Alaska Peninsula and Cook Inlet late in May, Kodiak the first of June, the earliest districts of Southeast Alaska around the

twentieth of June, in Bristol Bay the last week in June, in Prince William Sound and the rest of Southeast Alaska between July 1 and July 20. Fishing is all over at Bristol Bay the last week in July, and the season has ended everywhere by the end of August. The herring fishery begins operations early in July. Meanwhile the mines have become beehives of activity. On the farms, crops are in the ground and beginning to tint the fields green. The tourist rush reaches its peak late in July, and then falls off rapidly. Salmon, halibut, and herring seasons close one after the other. Crops are harvested ahead of the first frost. The little groups of junketing Congressmen disappear with the good weather. Placer mining halts as the first ice begins to form on the big rivers. The Indians and Eskimos migrate from fish camps to winter villages. The millions of neat cases of canned salmon have been loaded aboard ships and taken south. Like the migratory waterfowl, the workers in canning and mining operations straggle southward for the winter. Many scenes of recent bustling activity are left deserted. The days now are becoming very short. Logging camps and sawmills close for overhaul and repairs. White and native trappers tramp their lonely frozen trap lines. The people begin again to look forward to spring. Thus the year passes in Alaska.

In a situation in which almost all the productive activity of the year is crammed into a few months of summer, it is understandable that Alaska has never been able to attract and keep a large stable population. More than half of the workers in the canned-salmon industry are non-residents, brought north only for the fishing season. In many instances they live in company quarters, eat in company mess halls, and draw none of their pay while in Alaska. Fully half of the wages paid by this industry are paid outside of the Territory. Obviously one of the outstanding Alaska problems is the development of year-round industries.

Beginning in 1940 a significant though temporary new force began to make its influence felt on the Alaska economy. The defense—and later war—construction program was one which continued all through the year. It grew and grew until it surpassed

mining, then the fisheries and finally the two of them together, as a giver of employment in Alaska. At first only a few small army and navy bases were contemplated. Then, as the war engulfed Europe, and the ties between the aggressor nations of Europe and Asia became all too frighteningly obvious, Alaska emerged suddenly as one of the critical defense zones of the free world. The Alaska military-construction program was accelerated and vastly expanded. Additional bases and air fields were planned, undertaken, and completed faster than such projects had ever been accomplished before.

Outbreak of the war in the Pacific area, just over the horizon from Alaska, spurred the Alaska construction program to new heights and speeds. A military highway was pushed toward Alaska from railhead in eastern British Columbia without a pause even for surveys to be made. Port improvements were made in many places, and a busy barge line was instituted on the Inside Passage. A new terminus for the Alaska Railroad was provided, and great tunnels were drilled through the sea-level mountains to connect it with the line to the interior. The highway system was enlarged and diversified. A gasoline pipe line was laid along the line of main air fields. Much of the story of wartime work in Alaska cannot yet be told. In all, hundreds of millions of dollars were poured into projects in the North, and many thousands of men were employed on them. Truly, nothing like it had happened since the Gold Rush.

Now the war has left Alaska. The Japanese have been rooted out of the Aleutians, crowded down the Kuriles, and confined to their home islands. Most of Alaska was little affected by the military activities of the far western islands, where attacks were mounted and serviced. After the Attu campaign, the only fighting in Alaska occurred in the barrooms on Saturday night as the last of an army of construction workers spent some of the millions of dollars which have flowed into the Territory and—characteristically—out again. Most of the large Alaska projects are completed. Some of them already have been abandoned. The Terri-

tory is settling back, very slowly as yet, to a peacetime economy. But Alaska will never be the same. Too many amazing things have happened there. Too many amazed people have worked there.

Transportation, human contacts, national interest and the development of an enlarged American view looking westward to Asia have set the stage for substantial post-war progress in Alaska.

PART II

A THOUSAND CAREERS IN TEN CHAPTERS

OPPORTUNITIES IN THE FOREST INDUSTRIES

ALASKA contains some of the last great untouched forest regions of North America. While lumbermen throughout the United States, and even in the once heavily timbered Pacific Northwest, can see their large-scale logging operations rapidly coming to an end, Southeast Alaska offers a bright new field for forest utilization. Substantial development of various types of forest industry in Alaska seems assured within the near future.

The Tongass National Forest of Southeast Alaska contains an estimated 3,000,000 acres of merchantable timber, whose volume by species is as follows:

| | | | | | |
|-----------------------------|-----------------------|--------------------|---|---|---|
| Western hemlock | 58,000,000,000 | feet board measure | | | |
| Sitka spruce | 15,800,000,000 | " | " | " | " |
| Western red cedar | 2,350,000,000 | " | " | " | " |
| Alaska cedar | 2,350,000,000 | " | " | " | " |
| Total | <u>78,500,000,000</u> | " | " | " | " |

In the Chugach National Forest, centering on Prince William Sound, volume is as follows:

| | | | | | |
|---------------------------|----------------------|--------------------|---|---|---|
| Western hemlock | 4,220,000,000 | feet board measure | | | |
| Sitka spruce | 1,900,000,000 | " | " | " | " |
| White spruce | 100,000,000 | " | " | " | " |
| Cottonwood | 30,000,000 | " | " | " | " |
| White birch | 10,000,000 | " | " | " | " |
| Total | <u>6,260,000,000</u> | " | " | " | " |

In addition to these coastal forests, covering in all about 43,060 square miles, there is a very much larger but less valuable white spruce-birch forest zone in the interior comprising some 342,409 square miles. A very rough estimate of the volume of timber in the interior forest is 500,000,000 cords.

Alaska's valuable timber stands are not remote and inaccessible, as might be supposed, but on the contrary are located where they can be utilized very readily. It is estimated that three-fourths of the commercial timber in the coastal forests lies within less than three miles of tidewater. These dense stands fringe the shores of the mainland and hundreds of adjacent islands, rarely extending inland more than four or five miles or to an elevation of more than 1,500 feet. The sinuous coastline, with numerous bays and inlets, makes most of the timber readily accessible. Average volume per acre of the merchantable stand is around 26,000 board feet. In some areas, however, the volume reaches 40,000 or even 50,000 board feet. The heavy and fast-growing forest is a product of the mild, rainy climate of the region.

Since almost all of the commercial timber of Alaska occurs within the two national forests, its utilization in accordance with the principles of scientific forest management is assured. This means that the timber will be handled as a crop, with the annual cut never exceeding the annual growth, permanent wood-using industries thus being provided for. Up to the present time, only a small fraction of the potential growth has been utilized. These vast forests are of immense economic importance to Alaska.

Sitka spruce is the most valuable tree of Alaska. Not only is spruce lumber in good demand for uses ranging from packing boxes to interior finish, but the fiber is unequalled by any other Pacific Coast species for the manufacture of wood pulp. Most of the trees are very large, frequently having a diameter of 7 feet and height of 200 feet, although 5 and 160 would be more nearly the average for mature trees. The largest known spruce tree in Alaska is eleven feet in diameter at a point six feet above the ground. Western hemlock is used as piling in building wharves and fish traps, and for flooring and construction timbers. Its greatest utility, however, is as a sulphite pulpwood. It also makes an excellent grade of mechanical pulp. Although commonly reaching diameters of three to four feet, most of the hemlock of Southeast Alaska is from eighteen to thirty inches in diameter

and from 100 to 140 feet in height. The cedars are valuable principally for shingles, telephone poles, and specialized forms of lumber. The western red cedar of Alaska probably will be used in quantity after the virgin cedar stands of Washington and British Columbia have been depleted. Alaska cedar, due to its fine texture, bright yellow color, easy workability, beautiful satin finish, durability and pleasant odor, should eventually come into good demand for such specialty products as patterns, furniture, toys, turned articles, cabinet work, clothes closets, and chests. It has been used locally for boatbuilding, and in British Columbia has gone into battery separators.

The interior forest occupies the greater part of the large central plateau of Alaska, and principally the drainages of the Yukon, Tanana, Kuskokwim, and Copper rivers and the streams emptying into Cook Inlet. About half of the timbered area consists of fairly dense stands with trees of a maximum diameter of twenty-four inches, while the other half comprises open woodland with scattered limby trees. Timber line is low, generally between five hundred and a thousand feet above the valley floor. Due to its remoteness and small size, the interior timber is unlikely ever to move into general world markets in any quantity, but white spruce and white birch, the two principal species, can supply many of the needs of local industry and settlement. Small sawmills widely scattered throughout Interior Alaska now cut white-spruce lumber for mine flumes, home construction, and similar uses. Large amounts of the interior forest also are used for fuel in heating homes and running steamboats. Birch trees of the best quality are suitable for cabinetmaking, and should eventually come into commercial use for this purpose in the more accessible areas. Forests no better than those of Interior Alaska have become the basis for important industries in eastern Canada and some of the northern European countries.

The last census showed only 312 persons engaged in manufacture of lumber and timber products in all of Alaska in 1939, with the average number of wage earners in that year 250. In 1939 the

Territory reported twenty-four mills in operation, with a total production of 25,885,000 board feet of lumber and 2,471 squares of shingles. An all-time record production of 62,603,000 feet of lumber was reported in 1943.

Modern electric-driven sawmills of around 100,000 board feet daily capacity are located at Juneau and Ketchikan; Whittier has a new 75,000-foot mill; one at Sitka can cut 50,000 feet per day, and one at Wrangell 40,000; while 20,000-foot mills are located at Petersburg, Anchorage, Cordova, Fairbanks, Hyder, Irish Cove, and Ketchikan, and smaller mills operate at Afognak (2), Craig (2), Dayville, Fairbanks, Hyder (2), Ketchikan, Kimshan Cove, Klawock, Kodiak, Latouche (2), Metlakatla, Nulato, Petersburg (2), Pigot Bay, Ruby, Seldovia, Seward (2), Sitka, and Skagway. Two shingle mills are located at Ketchikan and two at Wrangell. Box factories operate at Juneau, Sitka, Ketchikan (2), and Wrangell. Most Alaska mills are quite small. In 1939, nine listed production worth less than \$5,000, six between \$5,000 and \$20,000, three between \$20,000 and \$100,000, and only three over \$100,000. The total of salaries and wages paid in 1939 was \$341,526.

Logging methods in use in Alaska are essentially those of Washington and Oregon. The trees are moved mostly by donkey engines and wire rope. A large part of the timber can be logged directly into tidewater by the use of two or three donkey engines in tandem. Log driving is not practicable in the short, turbulent streams of the forested section. Roads, tramways, or log flumes are necessary to move some of the timber to tidewater. Floating logging camps are in general use, and there is even one floating sawmill.

Employment in the forest industries in Alaska has always been to a certain extent seasonal. Along the coast, the shortness of the winter day, the very heavy rainfall during the winter months, and storms which make it difficult at this season to move log rafts, all discourage year-round operation. Since lumber mills everywhere shut down for a period each year for overhaul and repairs,

in Alaska it has proved most convenient and economical to take a breathing spell of two to three months in the winter. In 1939, for instance, the industry employed 426 in the peak month of May, but only 106 in January.

Most of the forest products manufactured in Alaska have always been used within the Territory. Starting with the heavy demand which World War I stimulated, however, Alaska lumber began to find its way into the export market. Shipments of wood, timber, and lumber to the United States in the decade 1931-1940 averaged 2,052,000 board feet annually, with a value of \$78,176. Toward the end of the decade, an improving market stimulated the export in 1940 of 2,974,000 feet of lumber having a value of \$116,752. A very small amount of Alaska lumber is exported to foreign countries, in 1940 some 598,000 board feet worth \$11,960 going into this trade.

Timber from the national forests of Alaska may be purchased by logging concerns as needed, or a unit capable of providing a supply over a period of years may be contracted for. Stumpage is paid as cutting proceeds, with prices averaging about \$1.50 per thousand feet for spruce and cedar, and \$1 per thousand for hemlock. Piling brings from 1 cent to 1½ cents per linear foot. By Forest Service regulation, settlers, miners, residents, and prospectors may be granted free use of timber for firewood, fencing, building, mining, and other purposes. During fiscal 1939, a total of 1,571,000 board feet of timber was given away in this manner.

While present timber use is fairly substantial, the forests of Alaska are being utilized to only a small fraction of their possible sustained-yield output. Much more lumber could be produced plus large amounts of plywood, poles, piling, shingles, and other wood items. More important, a permanent pulp and paper industry with production equivalent to 1,000,000 tons of newsprint annually could be supported, without endangering the foundation stocks of raw material. Late in 1944, new small sawmills were being installed at Craig and Metlakatla in Southeast Alaska, and a good sized mill was getting into production at

Whittier, the new terminus of the Alaska Railroad on Prince William Sound. At Ketchikan, plans were drawn for a modern shingle mill, equipped to produce 16-, and 18-, and 24-inch shingles. Considerable expansion appears feasible in the production of both shingles and cedar poles, for export. Establishment of a creosoting plant in Alaska would open up an additional outlet for locally produced lumber products such as piling, railroad ties, and bridge timbers. Such treated lumber and timber now must be imported, at an uneconomically high cost due to high transportation rates and the great bulk of such products. As population grows in Alaska, the market for lumber of all kinds for home, farm, and industrial construction should expand rapidly and justify the installation of new sawmills.

An interesting development in the forest-products field in Alaska during wartime has been the production of large quantities of Alaska spruce of airplane grade for use in plane manufacture. A special program, administered by the Forest Service, was set up in the summer of 1942 to log high-grade spruce logs in Southeast Alaska and move them to sawmills on Puget Sound that specialize in the manufacture of airplane stock. Logging took place in the west coast section of Prince of Wales Island, with all logging, rafting, towing, road building, and other operations conducted under contracts by relatively small operators. At the height of the program eight logging camps were in operation, employing three hundred men. The program was discontinued in the summer of 1944, when spruce was no longer needed for this purpose, because of the very great expansion of aluminum production facilities. In all, the program produced approximately 85,000,000 board feet of spruce logs, of which 50,000,000 were suitable for airplane use.

The most hopeful prospect for early expansion in the forest-products field—and indeed in any field—in Alaska is pulp and paper manufacture. The two principal timber species, western hemlock and Sitka spruce, are of high value for pulping. The hemlock, which is superior to eastern hemlock in this regard, is

the same tree which is the foundation of the large bleached and unbleached pulp industry in Oregon, Washington, and British Columbia. The bleached output goes into rayon and cellophane, and the unbleached and mechanical grades into newsprint. Sitka spruce is an excellent all-purpose pulping wood, comparing favorably with white spruce, the standard pulpwood of eastern North America. With an estimated commercial stand of virgin timber on the Tongass National Forest of 78,500,000,000 board feet, and allowing an average of 78 years as a rotation period during which this timber may be entirely removed under sustained-yield forest management, some 1,600,000 cords of wood of 600 board feet each can be taken from the forest each year. This amount would produce 800,000 tons of sulphite pulp a year or well over a million tons of newsprint paper, which is about one-fourth of the present annual newsprint consumption in the United States.

Plans for development of a pulp industry in Southeast Alaska were under consideration in the late 1920's but were dropped with the onset of the Great Depression. Again in 1944, with increasing interest being evidenced by the industry in extending operations from the Pacific Northwest and British Columbia into Alaska, the Forest Service designated a specific large timber tract for the inspection of pulp producers and invited a discussion of terms of a contract for the timber. The unit under consideration contains approximately 1,350,000,000 cubic feet of timber, an amount sufficient to supply a plant with a daily capacity of 150 tons of pulp for the first ten years and an enlarged capacity of 525 tons per day for a succeeding period of forty years. The terms of sale are drawn to apply particularly to a sulphate pulp and paper development, but with slight changes could be made to apply to plants proposing to produce other grades of pulp and paper. The unit is at the extreme southern tip of Southeast Alaska, centering on Ketchikan. It is probable that this unit will be offered for sale by competitive bid.

A plant of the size which the first pulp-timber unit would

support would cost about \$20,000,000 and would employ about 1,050 workers in mill and woods the year 'round. In Southeast Alaska there is timber sufficient to maintain at least four such plants, and to maintain them in perpetuity, without ever running out of raw material.

Aside from the excellent timber supply available on long-term contract with no necessity for large capital investment in standing timber, advantages offered by Alaska as a pulp and paper manufacturing area include location on the seacoast where cheap water transportation to any part of the world is available, absence of any serious waste disposal problem, a climate making possible year-'round operation, a dependable supply of pure process water, and excellent potential hydroelectric power resources. More than 800,000 horsepower has been covered by water-power surveys in Southeast Alaska, with the available sites offering high-head developments, short conduits, small drainage basins with heavy run-off, good water-storage facilities, and location directly at or close to industrial sites.

The proposed agreement offered by the Forest Service to cover the Ketchikan pulp-timber unit requires that the purchaser must install a 150-ton mill in Alaska within three years after the executing of the agreement or the end of the war. Recreational values of the area are to be safeguarded, with cutting prohibited along main roads, heavily traveled narrow sea channels, and along the shorelines of important recreation lakes and fishing streams, so as to prevent unsightly scars. The Forest Service insists that the plans of concerns entering this new field call for economically sized and well equipped plants, and for operations of a type that will promote continuous employment for skilled woods and mill workers and will foster the growth of thoroughly modern industrial communities.

Some of the West Coast pulp and timber concerns—notably the Crown-Zellerbach Corporation—are showing much interest in the Ketchikan unit. Establishment of a large pulp mill will open up numerous possibilities for related industry. Integration

of the pulp enterprise with plywood, shingle, and sash-and-door plants, which would use the logs especially suited to such purposes, would be highly desirable.

Even for the individual with modest capital, there are opportunities offered by the forest industries in Alaska. For instance, a small manufacturing plant employing three men has opened at Ketchikan to manufacture spruce oars, pike poles, peavies, cant hooks and similar articles. Large quantities of good spruce await fashioning into such products as furniture, ironing boards, musical instruments, paddles, and building materials. Red cedar could form the basis for small Alaska wood industries turning out beehives, caskets, carvings, incubators, borders, moldings, patterns, picture frames, light cooperage items, and drafting boards. Perhaps Alaska cedar offers the best possibilities of all, since its qualities and field of usefulness have never been studied adequately. A few years ago the navy was seeking a supply of this material for fashioning into "ship's knees" and stern posts on small power launches. Manufacture of small specialty products is a particularly appropriate endeavor in Alaska, where year-round industry is so conspicuously lacking and where the purely extractive industries need balancing by occupations which are "nine parts ingenuity and one part raw materials."

OPPORTUNITIES IN AGRICULTURE

There is no good opportunity for raising fodder and the climate would render its preservation extremely precarious. The character of the country is so rugged that it would hardly be advisable to keep many cattle; and grain raising, because of the moisture, is not to be thought of. Potatoes are small and watery from want of sun and excess of moisture. Cabbages are luxuriant, but will not head. Cereals fail. Pork has a disagreeable flavor from being fed on fish entrails, etc. There was in 1865 one old horse, which had evidently seen better days. Poultry does not succeed well. . . . The crows eat up all the young chickens, and also deprive the sucking pigs of their tails!

Thus did one early visitor to Alaska describe the agricultural possibilities of the region. Fortunately, his view—which is still widely held—was just about one hundred per cent wrong. There is no longer any doubt that agriculture can be successful in Alaska—and successful not only from the standpoint of scientific demonstration, but as a business. The fact is being proved continuously on an increasing number of farms ranging from Southeast Alaska almost to the Arctic Circle. The experience gained in this practical farming and in 45 years of work at Federally supported agricultural experiment stations in Alaska permits a fairly certain prognosis to be made of the agricultural prospects of the Territory.

The word of caution which should be inserted early in any discussion of those prospects is that farming in Alaska is beset with many difficulties. Alaska is not essentially an agricultural land, and very little of the large area of the Territory is at all suitable for tillage. The climate in even the best locations is not so favorable as in many parts of the United States. The growing season is short, and the variety of crops which can be raised with certainty is limited. Almost all the good land is covered with trees and

clearing it is difficult and expensive. Because of remoteness and the high cost of transportation, all the things which a farmer needs in the way of machinery, implements, building materials, seed, fertilizer, stock, petroleum products, food and clothing for his family, and other "imported" commodities are more costly than they would be anywhere in the States. Because of the high cost of living, the seasonal nature of most activities, the high wages paid in other fields of endeavor, and the absence of any sizeable farm-reared population, farm labor is very difficult to obtain and commands high wages.

Because of all these factors, the cost of producing farm crops is, by standards in the States, very high. If Alaska farmers had to compete on an equal basis in the same market as farmers in the United States proper, they probably could not successfully sell a single product, and there would be no agricultural development in Alaska. But Alaska farmers are competing not for such a hypothetical "neutral" market but for one in which the very cost influences which have been cited are strong advantages in their favor. The logical market for Alaska farm products is Alaska itself. Here the high transportation charges applying to competitive farm products shipped in from outside constitute in effect a "protective tariff" favoring the Alaska producer. This Alaska market is sufficiently large, as will be shown later on, to permit a three- or four-fold increase in the amount of farming which now exists, even if the population of the Territory should remain as small as it is. With the growth which seems certain, the opportunity for expansion will be large. It is important to remember that agriculture in Alaska, to be successful, must concentrate on supplying the food needs of Alaska. No export agriculture is considered seriously by anyone conversant with the realities of the situation.

Against most of the other disadvantages which have been cited, there must be weighed equally impressive advantages. The shortness of the growing season is compensated in large measure by the great length of the day in the summer. Most of the an-

nual precipitation occurs during the growing season. Because the land is new and its native cover has not been disturbed, almost no serious erosion has occurred. In some areas and in respect to some farm products, the advantages outweigh the disadvantages sufficiently to make farming in Alaska a profitable and satisfying endeavor for a growing number of families.

Since the increase in Alaska's farm population will come from among the farm people of the United States, an analysis of agricultural opportunities in the Territory should provide information permitting a comparison between farming in Alaska and farming in the States, so that individuals can determine whether Alaska seems for them a likely place in which to settle.

For agricultural purposes most of Alaska is utter waste land. The figures quoted most frequently for the potential farm land in Alaska are 65,000 square miles suited to agriculture and 35,000 to the grazing of domestic stock. These are admittedly only rough estimates, and the area actually of agricultural value might prove eventually to be only half so large. Since the census in 1939 showed less than 3,000 square miles in farms, and less than 12 square miles of crop land harvested, the question of the total of potential farm land in Alaska is of no immediate practical importance. There is certainly land enough for any agricultural use to which it is likely to be put in the near future.

The observations of many years point to three separate areas of Alaska as containing the most promising agricultural lands. All are located in that central strip of the Territory which lies between 145° and 152° West longitude. They are the Matanuska and Susitna valleys, the Tanana Valley, and the Kenai Peninsula. Each has its own particular advantages, and there has been some farming in all three areas for many years.

There are other regions of Alaska where some farming has taken place or may develop. These include certain locations in Southeast Alaska near the principal cities; the Kuskokwim Valley; Copper River Basin; Kodiak and other islands of Southwest Alaska, and the Yukon Valley. For various reasons, none of these

areas is so favorably situated as the three first named. The suitable level land of Southeast Alaska is extremely limited. The climate is so excessively humid and cloudy that it is difficult to mature some crops, even in the relatively long growing season this area enjoys. Most of Southeast Alaska is heavily forested, and farm land can be cleared only with difficulty and at high cost. Where this dense forest growth does not occur the ground tends to be peaty and wet. Owing to the water transportation ties with Seattle the year around, locally grown agricultural products must compete with those shipped in from the Pacific Northwest.

The most successful type of agriculture in Southeast Alaska has proved to be dairy farming to supply the larger towns with fresh milk, which cannot be brought in successfully from outside. Some opportunity for expansion along this line will arise as the population increases. Dairy stock may be pastured out of doors for about four months, but for the rest of the year must be fed. Hay is difficult to cure because of the heavy and persistent rainfall; consequently most dairy feed must be imported from Seattle. Because of its bulk, hay is expensive to transport. Before the war the freight rate from Seattle on hay was \$9 per ton to Ketchikan, \$10 to Juneau and \$11 to Sitka or Skagway. Wharfage and handling charges at Seattle and destination add about \$4 to each of these rates. On the other hand, milk also brings a very good price. The retail price in Juneau just before the war was 20 cents per quart. In other towns the price was as much as 25 cents. One or more dairies have operated successfully near each of the principal Southeast Alaska towns for many years. The Kuskokwim and Yukon valleys no doubt contain some good agricultural land, but they are far removed from any present market for farm products. As long as vast areas of equally good land are available in more accessible regions, settlement in these remote locations should be discouraged. Farming in the Copper River Basin has proved impracticable, as a result of the almost invariable occurrence of killing frosts in mid-August.

The most notable fact about Alaska agriculture, in its present

stage of development, is its failure to keep pace with the local demand for many of the products which can be produced successfully in the Territory. Shipments from the United States of food products, more or less competitive with those which can be provided by Alaska agriculture, amounted to more than \$5,000,000 in 1939. The various commodities were as follows:

| | |
|------------------------------------|--------------------|
| Meat and meat products | \$2,190,000 |
| Edible oils and fats | 50,000 |
| Eggs | 544,000 |
| Milk, condensed, evaporated, dried | 423,000 |
| Butter and cheese | 657,000 |
| Other dairy products | 57,000 |
| Fodders and feeds | 104,000 |
| Wheat flour | 263,000 |
| Potatoes, white | 143,000 |
| Other fresh vegetables | 230,000 |
| Vegetables, canned | 407,000 |
| Malt liquors | 597,000 |
| Total | <u>\$5,665,000</u> |

Strictly comparable information on the value of farm products supplied to the Alaska market by Alaska farms is not available. The census does, however, report sales of certain principal products. These data, in combination with those which have been cited, give a rough indication of the great discrepancy between the Alaska supply and the existing demand. The reported value of specified products sold from Alaska farms in 1939 was as follows:

| | |
|---------------------|------------------|
| Milk and cream | \$306,987 |
| Potatoes | 43,203 |
| Eggs | 40,523 |
| Vegetables | 22,930 |
| Greenhouse products | 13,095 |
| Poultry | 7,197 |
| Fruits and berries | 4,613 |
| Hay | 1,625 |
| Nursery stock | 1,320 |
| Total | <u>\$441,493</u> |

All of these figures are for the year 1939, prior to initiation of the large-scale defense and war program of construction in Alaska. The demand has been much greater recently and, although local production has been increased somewhat, a greater disparity than ever exists between the Alaska demand for farm produce and the amount of produce supplied by Alaska farms. A favorable market situation is certain to prevail after the war, even if all military demand should be removed.

About half of the Territory's population lives in Southeast and Northwest Alaska. Neither of these areas can produce much in the way of farm products. This fact, however, does not automatically make them favorable markets for produce from the good agricultural regions of Central Alaska. Because of round-about routes and high overland transportation rates, it is more costly to ship products from the Matanuska and Tanana valleys to Juneau or Nome than to ship such products to these points from Seattle. For this reason, total requirements for Alaska should not be used to measure the size of the existing Alaska market for locally produced agricultural products. A better measure is furnished by statistics on farm products shipped into the central areas over the Alaska Railroad. The so-called "railroad belt," considered broadly, as it should be in this connection, extends from the Gulf of Alaska to the Arctic Circle and from the confluence of the Tanana and Yukon rivers to the Canadian boundary. This is roughly the limit of the market area for farm products from the principal agricultural regions of Alaska. The population of this area in 1939 was about half that of Alaska, or 36,000. Shipments to this area of farm products which could be produced within the area were as follows in 1941 (army shipments not included):

| | <i>Tons</i> | <i>Computed Value</i> |
|----------------|-------------|-----------------------|
| Veal, frozen | 139 | \$451,609 |
| Beef, frozen | 1,053 | |
| Pork, frozen | 240 | |
| Mutton, frozen | 117 | |

| | <i>Tons</i> | <i>Computed Value</i> |
|---------------------------------|-------------|-----------------------|
| Poultry, dressed, frozen | 231 | 120,194 |
| Bacon and ham, smoked | 435 | 194,889 |
| Sausage, fresh, cooked & smoked | 136 | 55,103 |
| Meat, miscellaneous | 117 | 40,341 |
| Lard, pure rendered | 58 | 11,401 |
| Butter, fresh and brine | 460 | 297,813 |
| Cheese | 113 | 50,720 |
| Ice Cream Mix, frozen | 128 | 41,207 |
| Milk, evaporated | 1,135 | 151,434 |
| Potatoes | 1,091 | 42,563 |
| Carrots | 53 | 105,434 |
| Cabbage | 102 | |
| Vegetables, leaf | 384 | |
| Eggs | 719 | 268,511 |
| Total | 6,711 | \$1,954,571 |

For comparison with this set of figures, we have a report on the value of farm products sold in 1941 through the Matanuska Valley Farmers Cooperating Association:

| | |
|-------------------------|------------------|
| Meat | \$ 20,426 |
| Dairy Products | 51,294 |
| Eggs | 7,518 |
| Produce, incl. potatoes | 18,396 |
| Other products | 8,073 |
| Total | <u>\$105,707</u> |

This total sold through the Matanuska co-op might equal from one-third to one-fourth of the amount produced and sold in the railroad belt as a whole. Even multiplying the co-op total by four gives a result which indicates that the value of locally produced farm products equaled less than one-fifth of the amount of such products consumed in the rail-belt area. Farm production in the area, therefore, could easily be expanded several fold before it would overtake the demand of a civilian population of the size of that of 1941.

Only about one-fifth of one per cent of the land area of Alaska

was in farms in 1939. This compares with 55.7 per cent of continental United States, 60.6 per cent of Hawaii, 50 per cent of Guam, 83.6 per cent of Puerto Rico, and 65.4 per cent of the Virgin Islands of the United States. The total number of farms was 459, the total acreage 733,499, total crop land 11,134 acres, and crop land harvested 7,305 acres. Value of farms was \$3,011,207 for land and buildings. Since buildings on these same farms were valued by the census at \$1,638,005, land alone is left with a value of \$1,373,202, or an average of \$1.87 per acre. Value of implements and machinery was \$264,794. Livestock on all Alaska farms included 496 horses and mules, 3,749 cattle (of which 1,217 were cows kept primarily for milk), 959 pigs, 17,076 sheep, 289 goats, 18,374 chickens, 638 turkeys, 82 ducks and 367 geese. Judging from these figures and other evidences, agriculture in Alaska is very little developed, by any standard.

Because of its broad extent, across several clearly defined geographical provinces, Alaska presents a variety of quite different climates, as has been pointed out in an earlier chapter. Places on the Pacific Coast "enjoy" as much as 230 inches of annual precipitation, while places on the Arctic Coast have as little as four inches. Some localities have a growing season of 175 days, while others experience a killing frost every month of the year. An analysis of available climatic data narrows the probabilities for successful agriculture in Alaska to localities lying north of the coastal rainfall belt, south of the Arctic regions of too-short growing season and below the 1,000-foot altitude line where the hazard of summer frost is encountered. These limitations, in combination with considerations of soil quality, terrain, drainage and accessibility, point to the three areas previously mentioned as the best in Alaska for agricultural development.

The Tanana Valley

Areas of agricultural promise in the Tanana Valley are found along the Tanana River in interior Alaska from the Goodpaster

River to the junction of the Tanana with the Yukon. The length of the valley between these two points is 205 miles air line, and its maximum width seventy miles. It contains probably 7,000 square miles or 4,480,000 acres, of which perhaps one-seventh, or about 640,000 acres, is suitable for agricultural use. The Tanana Valley is 240 miles directly north of the Matanuska Valley, the other principal agricultural region of Alaska. The Tanana is thought to be the most northerly region available for agricultural settlement in Alaska. Some farming possibilities may exist in the Yukon Valley farther north, but they are suppositional at best. In a hasty and general soil survey made in 1914, it was estimated that 4,500,000 acres of available farm land existed in the bottoms of the Tanana, the highlands to the north and the bottoms of the Yukon still farther north. An agricultural experiment station was operated from 1900 to 1925 at Rampart on the Yukon River. Despite its far northern location, grain never failed to mature there. The effect of the long summer day is, of course, very pronounced at that latitude. It is pronounced in the Tanana Valley also, compensating in large measure for the shortness of the growing season.

The mean monthly temperature for stations in the Tanana Valley exceeds 50° for the months of June, July, and August. The average growing season is ninety-six days at Fairbanks and eighty-five at College, which is only a few miles distant but at a slightly greater altitude. Yet, the experiments cited in the chapter on climate showed College to have an average season between actual killing frosts of 105.4 days for tender plants and 123 days for field crops. One of the reasons for the long season without killing frosts has already been mentioned. Nights are so short at this time of the year that there is not sufficient cooling off to permit plants to be affected seriously. For this reason the Fairbanks vicinity is free of the danger of midsummer frosts, which make agriculture hazardous in areas many hundreds of miles farther south in central British Columbia. Annual precipi-

tation ranges from eight and a half to sixteen inches, with about half of it occurring during the growing season. June, July, and August are the wet season. The rainfall is of a drizzly type which is of maximum benefit to plants, while doing little erosion damage, providing the tilled land has a moderate slope. This precipitation, supplemented by the permanently frozen sub-soil, which keeps the water from draining down below the reach of the plant roots, is usually adequate for most crops. Summer thawing of the upper sub-soil also releases a certain amount of moisture which has been held in frozen form from fall, winter, and spring precipitation.

In 1939 the Tanana Valley contained forty-one farms with a total acreage of 10,274, including 2,306 acres of crop land, of which only about 600 acres were actually cultivated. The value of farm buildings was \$299,725, and of farm land \$247,765, or about \$25 per acre. Value of implements and machinery was \$55,740. Expenditures for feed and labor in 1939 totaled \$48,422. The "average farm" of the area, therefore, was one of 250 acres, of which 56 acres were in crop land. Its land was valued at \$6,045, its buildings at \$7,310, and its implements and machinery at \$1,360, a total of \$14,710. In 1939 it spent \$1,180 for feed and labor. The number of farms in the Tanana Valley is smaller than it was thirty years ago, and the acreage of abandoned farm fields is greater than that of cultivated farms. The decrease in agricultural activity in interior Alaska is due not to farm failures but to the passing on of many gold-rush stampeders who homesteaded in the area around the turn of the century. Most of these had no families to carry on. Younger people coming into the area more recently were usually attracted by the payroll industries, chiefly gold mining, rather than by farming. Truly, the problems of Alaska are those of prosperity, not adversity.

Principal products of farms in the Tanana Valley are hay, grain, potatoes, and dairy products. Sales of specified products in 1939, as reported by the census, were as follows:

OPPORTUNITY IN ALASKA

| | |
|----------------------------|-----------------|
| Whole milk and cream | \$54,742 |
| Poultry and eggs | 2,597 |
| Potatoes | 18,388 |
| Other vegetables | 17,470 |
| Fruits | 1,115 |
| Greenhouse products | 2,050 |
| Total | <u>\$96,362</u> |

This tabulation does not include field crops or hay. Recently, the value of Tanana Valley sales of farm produce has increased, as a result of greater production and better prices. In 1943 potatoes were bringing farmers seven cents a pound in ton lots. Summer pasture is available for four months. Winter feed can be produced in sufficient quantities to make livestock raising, and more particularly dairy farming, successful.

Yields per acre of the more important farm crops in the Tanana Valley are as follows:

| | |
|----------------------------|---------------|
| Oats | 36-75 bushels |
| Wheat | 20-25 " |
| Barley | 20-30 " |
| Hay (oat and field pea) .. | 1-3 tons |
| Potatoes | 4-7 " |

The Tanana Valley is strategically situated to supply a large area in Interior Alaska. The Tanana and Yukon river systems serve a broad hinterland during the navigation season (June through September) and a good road system serves the many mining camps of the district. The Alaska Railroad connects Fairbanks, the center of the Tanana Valley, with Mt. McKinley National Park, a potential market for Tanana Valley products. Because of its remoteness from outside sources of supply, the Fairbanks area provides a particularly advantageous market for locally produced agricultural products. The price commanded by such products is high both because of the great cost of importing competing products and because of the quality of local

produce as compared with produce which has been en route to market for ten days or two weeks.

The Matanuska-Susitna Area

The Matanuska Valley lies at the head of Knik Arm of Cook Inlet. Its center, the town of Palmer, is about fifty miles from the city of Anchorage, with which it is connected by rail and highway. It is also connected with Fairbanks by rail (326 miles) and by a recently completed highway (448 miles). Palmer is 105 miles from the port of Whittier, which is five to seven days from Seattle by steamship. The valley itself is about fifty miles long and sixteen miles wide.

Due to certain peculiarities of its location, the Matanuska Valley combines the most favorable characteristics of inland and coastal climates. Mountains modify the direct ocean climatic influence, which in this part of the Pacific is characterized by excessive rainfall. Thus, the average annual precipitation at Matanuska is 16 inches, while at Latouche on the Gulf of Alaska, only 120 miles away, the average is 184 inches. On the other hand, high mountains on the north effectively bar invasion of cold air masses from the interior, while the moderating influence of large bodies of water in its vicinity protects the valley from extremes of temperature and gives it an average frost-free growing season of 108 days, as compared with a season of only eighty days at Talkeetna, sixty-five miles north of Palmer. Furthermore, over the twenty-five years in which weather observations have been made at Matanuska, the dates of beginning and end of this frost-free period have been remarkably reliable. The latest date on which frost has ever occurred in the spring was June 2 and the earliest in the fall was August 26. Even in the very unlikely event that extremes such as these should occur in the same year, the valley would still have a growing season of 86 days. At Talkeetna, by contrast, in some years frost has been experienced every month. As has already been mentioned, allowance should be made in speaking of the "growing season," as in-

icated by Weather Bureau records, for the fact that the actual growing season is not limited by the last 32° temperature in spring and the first 32° temperature in the fall, but by the respective dates of killing frost. Ten days may be safely added to the figures given for the Matanuska Valley, in order to delimit the actual growing season for hardy plants.

Climatic conditions are known to vary markedly within the Matanuska Valley. The United States Weather Bureau a few years ago set up a series of stations in the valley to make a study of these variations. The first results of this micrometeorological work, published in 1942, show a wide range of climatic differences. In one month, prevailing wind direction varied from southeast at one station to north at another; number of cloudy days from four to fifteen; number of days with measurable precipitation from one to seven; total precipitation from .49 to 1.07 inches; number of clear days from one to eight, etc. Careful analysis of these observations after a few years of record should begin to give some scientific basis for determining in what sections of the valley agriculture will prove most successful. In 1943, Matanuska enjoyed 150 days between spring and fall 32-degree temperatures, while Palmer had 165 and a point across the Matanuska River 132.

In general the climate of the valley is more agreeable and more favorable to agriculture than that of many localities in the north central and northern plains States. Monthly mean temperature is 12.9° above zero F. in January, the coldest month, and 58.1° in July, the warmest. Mean maximum ranges from 21.4° in January to 67.6° in August. Mean minimum ranges from 3.7° above zero (Fahrenheit) to 47.3°. Summer temperatures are never oppressive, and the thermometer seldom goes below 10° below zero, even in the coldest nights of winter. In December the number of hours of sunlight daily is reduced to about seven, though this is more than compensated by the fourteen hours of sunlight daily in April, seventeen in May and the period of practically

no darkness from mid-June to mid-July, when crops and farmers can use the daylight to best advantage.

The approximate area of the Matanuska Valley below Moose Creek is one thousand square miles. Considerably less than half of this is suitable for agricultural use. Shallow soil, graveled stream bottoms, rocky ridges, and (particularly) poor drainage, rule out farming in portions of the valley. About 28,000 acres or forty-four square miles are now in farms, some of which have been abandoned since before the time of the Federal colonization project. It is estimated that there are at least 25,000 to 50,000 acres now in timber, which would be suitable for new farms. An additional 200,000 acres of range land are available in the foothills of the nearby Talkeetna and Chugach mountains. In the summer of 1943 there were about 250 farms in the valley, 144 of which had been established by the Alaska Rural Rehabilitation Corporation in connection with the colonization project. About 6,000 acres of land had been cleared. The population of the valley, including the towns of Palmer and Wasilla, was estimated at 2,250. Farmers owned about 700 dairy cows, 600 hogs, 1,200 sheep, 100 horses, and 100 beef cattle.

Most of the soils are loam in texture, easily worked and from one to five feet deep. Soils in continuous cultivation require application of fertilizers, to which they respond well. A wide variety of crops may be grown in the Matanuska Valley. The chief types of farming are dairying, general farming (cattle, hogs, poultry, and vegetables), truck farming, hog raising, and poultry raising. As the demand for milk in the Anchorage area far exceeds the supply, dairying has become an active and profitable type of farm enterprise in the valley. The price received by the farmer in 1943 was \$6.20 per hundred pounds of milk with four per cent butterfat content. Retail price in Anchorage was 30 cents per quart. Other dairy products, such as cottage cheese, buttermilk, and ice-cream mix, are also in good demand.

About the only crops which do not do well in the valley are

the hot-weather crops such as corn, squash, cucumbers, tomatoes, and melons. Some of these may be grown profitably in greenhouses, however. Potatoes are one of the major Matanuska crops. In 1943 growers received \$5 per hundred pounds. Early and late cabbage, cauliflower, parsnips, celery, rutabagas, turnips, carrots, beets, chard, peas, radishes, leaf and head lettuce, string beans, rhubarb, onions, kohlrabi, and spinach are produced successfully. Oats, barley, and wheat can be grown, although the grains do not command the same relative advantage over "imported" products which fresh milk and vegetables enjoy. Oats, peas, and vetch are grown for hay and silage. Native grasses in some areas can also be counted upon for these purposes. Good pasture is available, especially in areas where intensive management is practiced.

Sales in 1941 through the Matanuska Valley Farmers Co-operating Association have already been listed. Average yields per acre in the Matanuska Valley are as follows:

| | |
|--------------------------|------------|
| Oats , | 45 bushels |
| Barley | 23 " |
| Wheat | 22 " |
| Hay (oat, pea, vetch) | 1.5 tons |
| Silage (oat, pea, vetch) | 7 " |
| Potatoes | 4.6 " |
| Cabbage | 12 " |
| Rutabagas and turnips | 8 " |
| Carrots | 10 " |
| Lettuce | 86 crates |

It will be noticed that yields are almost identical with those in the Tanana Valley.

A few beef cattle are raised by some farmers. Although there is extensive summer range, the long winter feeding season tends to make this enterprise unprofitable, since hay is not easy to cure and grain does not mature too well in this locality. It is conceivable that the time will come when grain, and even hay,

grown in the Tanana Valley will be shipped south to the Matanuska Valley for the feeding of hogs, beef cattle, and, possibly, sheep. All of these animals are now being raised successfully in the Matanuska Valley. Goats, poultry, and rabbits also do well.

Particular advantages of the Matanuska Valley over other agricultural areas in Alaska include the existence of a good system of farm roads, the nearby market at Anchorage, the Alaska Rural Rehabilitation Corporation which assists in financing and developing farms, the Matanuska Valley Farmers Cooperating Association which markets farm products, good schools, developed community life, a Rural Electrification Administration system of electric lines, and an attractive surrounding countryside.

The Susitna Valley lies to the west of the Matanuska and extends northward to the base of the Alaska Range. Although there is little basis in farming experience or technical studies on which to rest comparisons, most conditions are believed to be about the same in this area as in the Matanuska Valley, except of course that transportation, services, and marketing facilities have not yet been developed.

Kenai Peninsula

Some of the best agricultural land in Alaska is found in the western part of Kenai Peninsula, between Kachemak Bay and the Kenai River. The northern portion of this area has been closed to agricultural settlement through its incorporation in the Kenai National Moose Range in 1941. The portion south of the Kasilof River, containing the best of the lands, remains open to settlement. On the basis of reconnaissance surveys, all very tentative, it has been estimated that from 600,000 to 1,000,000 acres of bench and bottom land in the Kenai lowland are sufficiently smooth and well drained to be used for crop production. Most of this area is thought to be good farm land, with soils of about the same productivity and apparently the same dura-

bility as those on what would be described as good farm land in northeastern United States. Soil is deeper than in any other farming area. It has been estimated that 35,000 acres in the so-called "Homer country" can be cultivated without any clearing. Only eighty acres were under cultivation in 1941. Some additional land has been put under cultivation since then but the area in crops is still very small. The region is one with relatively long growing season (112 days), cool summer temperature and abundant rainfall (seventeen to thirty-three inches annually). About eight inches of precipitation falls during the growing season. The annual rainfall peak occurs in September. The climate is somewhat milder than in the Matanuska Valley.

The Kenai Peninsula agricultural area has the longest grazing season in Alaska. Stock can graze for seven or eight months. For this reason, livestock raising is believed to be the most promising type of farm enterprise for the area, and a good start has been made on a livestock program. Recently there has been a shift from livestock to the more intensive production of truck crops, to meet the heavy demand furnished by military establishments on Kodiak Island. The army is encouraging a larger production of lettuce, celery, cabbage, etc., and most farmers around Homer are specializing at present on potatoes. But livestock remains the favored specialty of the area. Putting up hay for winter feed is a difficult problem, because of the heavy rainfall which occurs in the curing period. An experiment station which operated in a very small way at Kenai from 1899 to 1907 was able to put up oat hay "in excellent condition with haymaking machinery" and found it to make a most successful ration. The secret of success, according to publications of this station, is "rapid performance of a large amount of work at the proper time." Hay was cut in the milk stage and required from ten to twenty-five days to cure. It was stirred on the ground after being mowed, and every effort was made to prevent its becoming wet while on the ground. The hay was put up in small cocks, which were found to withstand considerable rain. This, of course, was at Kenai, where precipi-

tation in the critical haying season is somewhat less than at Homer. Results of the experimental station program at Kenai were summarized as follows:

- (1) Grain cannot be matured successfully in the region.
- (2) The hardy vegetables can be grown very successfully.
- (3) Berry fruits can be grown.
- (4) Cattle can be reared and butter and cheese of good quality made.

The agricultural development which has taken place at Homer is quite remarkable in view of the fact that settlement has not been encouraged by a government project, as in the Matanuska Valley, nor have the Homer settlers had a good market for their produce, such as is enjoyed by each of the other main agricultural regions in Alaska. The attractions of the Kenai Peninsula are good soil, open grass land which can be cultivated without expensive clearing and a mild though by no means ideal climate. These have been sufficient to encourage many home-seekers to establish farms. The Anchorage Land Office has been receiving an average of three or four inquiries daily from people interested in settling at Homer.

Lack of transportation is the greatest disadvantage to settling on Kenai Peninsula at the present time. No roads connect the agricultural areas of the western part of the peninsula with settled communities which could furnish a market for farm products. Even water transportation, which is a reliable standby for almost every other section of Alaska, is difficult or impossible along much of the western shore of Kenai Peninsula. If Kenai Peninsula is to develop as a region of farms, a road connection with the Alaska Railroad or with Anchorage is a necessity. Two possible routes have been suggested: One would follow the shoreline from Homer to Hope; the other would turn inland along the Kenai River to connect at Kenai Lake with the existing highway on the eastern side of the peninsula. In either case, a difficult engineering problem is involved in crossing Turnagain Arm to reach Anchorage.

Except for the Kenai Peninsula areas to which reference has been made, almost all the worthwhile potential farm land in Alaska bears a forest cover which must be cleared before it can be brought under cultivation. For the most part, this forest cover is not heavy nor difficult to clear. In the Matanuska the timber growth is quite dense, and many trees have a diameter of one foot or more. In the Tanana the forest cover is much lighter and consists principally of spruce and birch. Experiment and experience indicate the following clearing method to be most suitable: first, slash the timber; remove the logs; pile and burn tops and brush; tip stumps with a bulldozer (best performed when stumps have been permitted to stand one or two years after slashing); bulldoze stumps into windrows; finally, break the land with a heavy breaker plow followed by a heavy disk. Crops will not be large in the first year of cultivation.

Some study has been made of the most economical size of family farm units. The size and type of farm which is best will depend upon the topography, the soil, and the use to which the farm will be put. It seems to be generally agreed that for general farming or for any economical livestock unit, the farm in Alaska should not be less than 100 to 160 acres. For gardening or poultry raising, forty acres might be sufficient. In fact, for a straight gardening enterprise, ten acres of land intensively cultivated will make an excellent return. The original plan for the Matanuska colony called for forty-acre tracts, but it was soon recognized that this was too small; so many larger units were laid out. A study by the Bureau of Agricultural Economics found in the summer of 1939 that the valley had 93 farms of less than 50 acres, 16 of 50 to 75 acres, 57 of 75 to 100 acres, and 2 of more than 100 acres. Cleared land available for crop production at that time averaged 17.5 acres per farm. A program of land use on a minimum eighty-acre general farm in the Matanuska Valley might be as follows: three acres for farmstead and garden, fifteen acres of farm woodland, twenty acres of permanent pasture and forty-two acres for cultivated crops. A somewhat larger farm unit

is recommended for the Tanana Valley than in the Matanuska, due to the need for more feed production and pasture. A farm in the Fairbanks region, according to the experiment station at College, should have not less than 160 acres, on which the land would be used approximately as follows: five acres for farmstead and garden, thirty acres of farm woodland, forty acres of permanent pasture, and eighty-five acres for cultivated crops.

In the long run the best type of farm is the general farm, on which all vegetables needed for home use are raised in addition to some products for which there is a market. The income-producing capacity of various types of farms in the Matanuska Valley was estimated a few years ago, in terms of net annual income remaining to a family as follows: general farm (two horses, five cows, one yearling, five calves, two hundred chickens, two brood sows, garden, potatoes), \$484.54; dairy farm (two horses, five cows, one yearling, seven calves, two hundred chickens, one sow, five pigs, garden, potatoes), \$624.86; sheep farm (two horses, 153 sheep including ewes, one cow, one hog, twenty-five chickens, garden, potatoes), \$935.66; poultry farm (two horses, two cows, one calf, a thousand chickens, one hog, garden, potatoes), \$810.28. These amounts were in addition to subsistence products and a family cash budget of \$765 allowed on each farm to cover expenditures for clothing, food, medical care, oil and lights, recreation, education, insurance, maintenance and repairs, and miscellaneous. It will be noted that each farm is pretty much of a "general" farm. Specialization to any high degree is not recommended in the present state of agricultural and market development in Alaska.

Probably nowhere in the world does there exist a more favorable farm market, as far as prices are concerned, than in the rail belt of Alaska. This situation is due to the very high cost of transporting farm products to the area from the Pacific Northwest, the nearest "outside" agricultural region. This cost, for specified quantities of products which can be produced in Alaska, has been computed as follows:

OPPORTUNITY IN ALASKA

| | | <i>Seattle to Anchorage</i> | <i>Seattle to Fairbanks</i> |
|------------------------|------------|---------------------------------|---------------------------------|
| Eggs | 100 dozen | \$ 8.88 | \$19.08 |
| Butter | 100 pounds | 5.09 | 7.54 |
| Fresh meat and poultry | 100 " | 5.11 | 8.36 |
| Cheese | 100 " | 2.33 | 3.92 |
| Ice cream | 100 quarts | 10.39 | 15.67 |
| Flour | 98 pounds | 1.25 | 1.85 |
| Potatoes | 100 " | 2.23 | 3.78 |
| Cabbage | 100 " | 2.67 | 4.41 |
| Onions | 100 " | 2.27 | 3.85 |
| Beets | 100 " | 7.80 | 11.93 |
| Turnips and rutabagas | 100 " | 2.37 | 4.01 |
| Lettuce | 100 " | 9.93 | 15.21 |
| Celery | 100 " | 6.26 | 9.60 |
| Peas and beans | 100 " | 6.52 | 9.93 |
| Berries | 100 " | 7.59 | 11.61 |

The amounts shown (which do not include a special wartime surcharge on water transportation) constitute the margin against which Alaska producers are able to work. Farm products cost more to produce in Alaska than in most localities, but not sufficiently more, under good practices, to preclude the possibility of Alaska farmers meeting outside competition and making a very good living. If Alaska farm products can compete in quality and can be distributed economically, the Alaska farmer can prosper. The high freight costs, in effect "protective tariffs," make this possible. As Alaska develops, some decrease in transportation costs is to be expected. Because of the great distance from outside sources of supply, however, these costs are probably never going to be very low. The cost of transportation by truck over the new Alaska Highway is several times as high as by ship and railroad, on which the foregoing table was based. Air transportation, even if rates are reduced in accordance with the most optimistic estimates, will also be much too expensive to furnish competition. Despite all foreseeable transportation and

technical advances, the outlook for continued high prices for farm produce in Alaska after the war is very good.

The Alaska farm products which can command the best market position are those on which a premium is placed for freshness. Milk, eggs, green vegetables, and strawberries are in this category. Alaska farms have never produced enough celery, lettuce, or cauliflower to supply the market for more than a few days at a time, although a large planting at Fairbanks during the 1944 season was sufficient to furnish all local needs from mid-July to the first frost. Production of milk in Alaska nowhere comes up to demand. Further expansion of dairy herds depends very largely upon the success with which winter feed crops may be produced locally.

A special problem is encountered in Alaska in marketing eggs. Alaskans have become so accustomed to cold storage eggs that they do not object to their lack of freshness; many persons, in fact, actually prefer their bold flavor. In this same manner, through long conditioning, many Alaskans prefer canned milk to fresh. No doubt these tastes will change when fresh eggs and milk come on the Alaska market in sufficient quantity. Egg production in Alaska is perfectly feasible. A hatchery, with capacity of 30,000 eggs, is available at Palmer, in addition to a number of small incubators. A hundred per cent Alaska poultry ration, consisting of barley, oats, and wheat, supplemented by fish meal, has been developed and used successfully, eliminating the necessity of importing feed.

Other miscellaneous opportunities abound. Last year one farmer netted \$600 from rabbits. Another at Fairbanks sold 400 Christmas trees at from \$1 to \$5 apiece. One farm raised 15,000 cabbages which were converted into sauerkraut and sold through the butcher in a nearby town. A pork farm and sausage works operating near Anchorage keeps 350 hogs moving toward the grinding machine. Recently 500 baby chicks were flown to Fairbanks by plane from Seattle to become fryers and layers. Another such feat moved 44,000 bees by air to the same destination from

Redding, California. The 350 pounds of honey which they produced brought a return of \$175 on the \$55 investment in bees laid down in Fairbanks. As bees do not winter over successfully in this climate, they were asphyxiated in the fall, and a new lot will be imported this year. A greenhouse chemiculture enterprise has been established at Sitka to produce tomatoes. A similar venture with cucumbers in Interior Alaska has proved very profitable. Because of the existence of a large market, accustomed to paying high prices, and never adequately supplied with fresh produce, most farm products of quality can be moved quite readily. This will continue to be true until the local supply increases to overtake demand—which is a long way in the future.

In 1937 members of the farm colony in the Matanuska Valley organized the Matanuska Valley Farmers Cooperating Association to market their products and also to conduct a general store, dairy, etc. The co-op operates by paying producer-members established prices for their products, by grading and preparing the products for market, by disposing of them to retail outlets or institutional purchasers in nearby communities, and by distributing profits to members at the end of each year. Recently, farmers at Homer formed a similar cooperative. In the Fairbanks vicinity there is a Tanana Valley Farmers Association, through which producers of that area market their products.

No comprehensive plan for the development of agriculture in Alaska has ever been formulated by either the Federal or the Territorial government. The Matanuska colonization project was undertaken in 1935 in order to meet a particular social and economic situation. Its limited objectives were rather successfully attained, although not without some confusion. In 1937 the status of agriculture in the Territory was surveyed by a group of technical experts from various governmental agencies who published their findings in *Alaska, Its Resources and Development*. Two years later a number of these agencies cooperated in making a land use survey of the Matanuska and Susitna valleys. Unfortunately, the results of this effort have not yet been

assembled and published in usable form. In 1939 the Department of Interior published a report on *The Problem of Alaskan Development*, part of which dealt with agricultural problems. Meanwhile the Alaska Planning Council and later the Alaska office of the National Resources Planning Board devoted some attention to the over-all problem of agricultural development.

Although these various recent efforts have not been so well integrated as would be desirable, there has emerged from them a substantial body of sound information on the problems encountered in establishing successful farm communities in Alaska. The conclusion of most of these studies is that much work within the responsibilities of government agencies remains to be done in Alaska before individual settlers will have a reasonable certainty of success in establishing farms in the Territory. Land classification surveys to determine the areas most suitable for agricultural use are perhaps the outstanding unfulfilled need. Additional weather stations in the promising farming areas are required. Additional experimental stations, particularly in the Homer area and in the upper Tanana Valley, could perform an invaluable service. Unfortunately all these basic tasks require much time to accomplish. Settlers who go to Alaska immediately after the war will in most cases be gambling with the unknown.

Inclusion of Alaska in the wartime tri-metrogon aerial mapping program of the army is producing a base map of untold value for land classification purposes. Soil and cover surveys on the ground should be hastened so that the actual classification can be made wherever possible in advance of settlement.

Climatological records for some stations in Alaska extend from as early as 1847. Unfortunately the record in the principal agricultural areas is too brief and is furnished by far too few stations. Quite properly, but unfortunately for agricultural development, the efforts of the Weather Bureau in Alaska in recent years have been centered on forecasting for airplane operations. The Bureau has, however, established a series of stations in the Matanuska Valley to make observations for agricultural pur-

poses. Similar programs for the Tanana and Susitna valleys and for the agricultural area of Kenai Peninsula are much to be desired. No summary of Alaska climatological data since 1921 has been published, though more recent reports of the Bureau presumably will be removed from their confidential status now that the war is over.

A program of agricultural experimentation has been under way in the Territory since 1898, with stations in operation at one time or another at Sitka, Kenai, Rampart, Copper Center, Kodiak, Fairbanks, and Matanuska. Only the two last named are maintained at the present time. (A third station in Southeast Alaska is devoted exclusively to fur farm problems.) They are financed jointly by the Territory, through the University of Alaska, and the Office of Experiment Stations of the United States Department of Agriculture. Research carried on in recent years includes such projects as the use of oat and pea ensilage as a substitute for dry-cured hay in feeding dairy cattle; growing and finishing swine on locally produced grain and pasture; crop rotation; potato production, with emphasis on seed production and the control of disease; raising dairy calves on locally grown grain, fish meal, and powdered skim milk; wintering sheep on various feeds; use of commercial fertilizer in potato production; canning peas; pasture improvement; variety tests with alfalfa, and studies of yellow-blossom alfalfa. Some of the fields in which additional work should be done include improvement of grains and grasses; development of legumes which will meet the special conditions found in each of the three agricultural areas; nutritional studies of feed crops; soil management; improvement of pasture lands; control of insects, plant diseases, and weeds; selection and improvement of fruits and berries; raising of seed potato stock and perhaps other kinds of vegetable products which would warrant shipment to the States, etc. No real program of agricultural research has yet been undertaken, although the field for it is enormous.

Much work in agricultural-economics studies must be accom-

plished before farming in Alaska can be removed from the experimental category. One such study should deal with types of farming enterprises and the average income produced by each on farms of various sizes in various localities in Alaska. Economic and technological studies of Alaska marketing problems are entirely lacking. Scientific farm development and farm-management studies are also urgently needed, as is work in the fields of production and management. A Territorial Department of Agriculture, established by the 1945 Legislature, may undertake some of these research studies.

Financing and some other types of assistance are furnished to Alaska farmers by two agencies, the Alaska Rural Rehabilitation Corporation and the Farm Security Administration. The former, under the Department of Interior, operates only in the Matanuska Valley, where it has general administration of approximately 140 farms and 12,000 acres of land, of which about 4,000 are under cultivation. The ARRC aids in the development of farming in the valley by maintaining reserve and emergency supplies of hay, feeds, seed, fertilizer, etc., to meet unusual conditions; by clearing additional land; by making production loans to farmers at a low rate of interest; by maintaining farm machinery to grow reserve supplies of hay and feed on vacant tracts; by maintaining wells, etc. The ARRC is the agency which collects on the contracts of the Matanuska colonists. The Farm Security Administration stationed a representative in Alaska in 1943 to make small "food-for-victory" loans to farmers at low rates of interest. This agency operates throughout Alaska, with headquarters at Anchorage.

The University of Alaska maintains an agricultural extension service of the type with which farm families in the States are familiar. Offices are located in each of the main agricultural areas. The Rural Electrification Administration provided funds in 1941 to install 92 miles of electric line to serve farms in the Matanuska Valley. This service is under the control of the Matanuska Electric Association, Inc., which in 1943 reported

235 patrons. The Territory, which for some years has provided the services of a veterinarian, recently found it necessary to add a second in order to keep up with livestock expansion. Public health nurses are stationed at Anchorage, Palmer, and Fairbanks, while Homer is served by the nurse stationed at Seldovia. Good schools are available at Homer, Kenai, Ninilchik, Anchorage, Palmer, Wasilla, and Fairbanks, to mention only those located in the principal agricultural areas. School buses serve rural areas in the vicinity of most of these schools. Hospitals, under various private philanthropic auspices, are available at Anchorage, Palmer, and Fairbanks. Some or all of these facilities would have to be sacrificed by settlers going into undeveloped areas such as the Susitna, Kuskokwim, or Yukon valleys or the southwestern islands.

The prospective settler will want to keep many things in mind as he looks for a place to farm in Alaska. Among these are: (1) character and depth of soil, (2) lay of the land, involving steepness, uniformity and direction of slope, (3) danger of erosion, (4) adequacy of soil and surface drainage, (5) amount, character, distribution, seasonability, and reliability of rainfall, (6) maximum, minimum, and mean temperatures during the several seasons, (7) usual, maximum, and minimum humidity through the various months, (8) amount, character, seasonal and daily distribution, direction and prevalence of winds, (9) amount, distribution, and effectiveness of sunshine, (10) characteristics of the various seasons, (11) length of the growing season, (12) geographic location, (13) character of the native vegetation, (14) adequacy and cheapness of transportation facilities, (15) accessibility to adequate markets, (16) pleasant and low-cost living conditions, and (17) a sufficiently large block of productive land in the vicinity to make possible the development of cooperative marketing.

"Erosion" is a word to which all up-and-coming farmers pay particular attention nowadays. Fortunately there are a number of factors reducing the threat of serious erosion on Alaska land.

These include the long period of each year when the land of the interior is "locked up" by freezing, the relatively short period that is available for either cultivation or grazing use, the rapidity of growth and the density of vegetation, the amounts and character of the rainfall, the predominance of close growing crops in the present system of farming, the inherent character of the predominating soils and the relatively short slopes. Experts of the Soil Conservation Service who have looked over the farming areas of Alaska, however, warn that "there is no section of Alaska that is free from an erosion threat. . . . It is only because of the fact that there has been relatively little clearing of land in Alaska, either for agriculture or for any other use, that the soil-washing problem is not quite general at the present time." Under good modern practices there is no reason why any part of Alaska suitable to tillage should ever lose its top soil and become a dust bowl.

How can land be acquired by people who want to farm in Alaska? Almost two-thirds of the total area of Alaska is "vacant and unreserved" and thus open to homesteading. The homestead laws are explained in the later chapter entitled "Rules and Regulations." Most of the good agricultural land in the Matanuska and Tanana valleys, however, has been withdrawn from homestead entry. When the Matanuska colony was established, a total of 253,440 acres was withdrawn in the Matanuska Valley in order that settlement could proceed in an orderly fashion and only on suitable land. In the Tanana Valley large areas have been withdrawn in recent years for military and other reservations. A strip of land five miles wide on each side of the new Alaska Highway has also been withdrawn from settlement. Some of these withdrawals, such as that along the highway, are temporary. Most of this land will be opened to settlement after the war. In all parts of Alaska, particularly around Fairbanks, there exist abandoned homesteads whose owners have long since disappeared. The 1945 Legislature passed a land registration act designed to restore such lands to use.

In June of 1945, some 6,500 acres which were contained in the original Matanuska withdrawal were opened to homestead entry. This land is in the vicinity of Wasilla. Under recent legislation, veterans of World War II had a ninety-day period of preference in filing. The area was to be opened to the public generally in September of 1945.

Because of the Matanuska and Tanana withdrawals, many settlers have turned in recent years to the agricultural area of Kenai Peninsula, where good land is open for homesteading. Except for occupied farms and the area which has already been mentioned as included in the Kenai National Moose Range, most of the promising agricultural region of the peninsula is open for immediate settlement. In the absence of land classification, however, a great danger of locating on land which is really not suitable for farming exists in this area. Settlers should be warned of this risk. In the Matanuska and Tanana valleys, while withdrawals may seem irksome at this time, there will be less likelihood of misguided settlement when the areas are finally opened after classification. A party from the Land Classification Division of the General Land Office spent a summer in the Fairbanks vicinity mapping available lands as to soils, drainage, slope, vegetative cover, and present land use. Land classification, as it is known in the States, was not attempted in this hurried survey. The maps thus prepared will be of considerable help to the homesteader in choosing land, but a personal inspection of the ground will remain the only satisfactory way of picking a place to farm.

Aside from homesteading there is another practicable method of obtaining farm land in Alaska. This is by purchase, either from an individual owner or, in the Matanuska Valley, from the Alaska Rural Rehabilitation Corporation. Purchase may be made occasionally of fully equipped and developed farms. A farm of 80 to 160 acres can usually be purchased at prices ranging from about \$4,500 to \$6,000. The ARRC, in the Matanuska Valley, will sell or rent vacant farms to families who meet cer-

tain qualifications. Terms may be arranged for about one-fifth down payment, with the balance to be paid in ten to fifteen years, with interest of 3 per cent per year on the unpaid balance. Such farms may instead be leased for the first year at a monthly rental of \$25 to \$35. In case the renter decides at the end of the year to purchase the farm, two-fifths of the rental paid applies on the down payment. Most farms which might be available on such terms would have from twenty to forty acres of cleared land, and a good barn, a house of from five to seven rooms, a chicken house, a wellhouse and frequently additional small buildings. Of course, the number of such established farms for sale would be limited.

Early in 1944 the ARRC purchased 7,000 additional acres of land from the General Land Office, making its total holdings in the Matanuska Valley 15,000 acres. These comprise some of the best farm lands in the 253,440 acres which were withdrawn when the colonization project was instituted. The Corporation intends to sell the land under its control to competent farmers who have the ability to develop stable family-type farms.

The land and farms sold by the ARRC have been subject to a deed restriction to which some of the original Matanuska colonists objected. This restriction bound purchasers to dispose of their farm products through the Matanuska Valley Farmers Cooperating Association. It also specified that any eventual sale of the farm must have the approval of the Corporation. The reasons for such a restriction were obvious. The Federal Government, which spent large sums in establishing the farm colony, wished to insure that it should be a truly cooperative farm community in which all settlers would share the advantages which governmental development had made possible. The objections to the deed restriction were also understandable. Most farmers like to be independent and to feel that they can own their land and market their products "without strings attached."

Recently the ARRC has announced a policy of freeing purchasers from the restriction and giving them a clear title to

their farms as soon as they have paid their indebtedness. This removes one of the main causes of dissension in the valley. In view of the many criticisms to which the Matanuska project has been subjected, it is only fair to state that after almost ten years the beneficial results of this type of planned agricultural development, as compared with individual hit-or-miss settlement, have been quite forcefully demonstrated.

Many of the original Matanuska colonists, as was well publicized in the press, were never happy in Alaska and shortly returned to the States. Others took their places, and the number on the ARRC's waiting list has always greatly exceeded the number of farms available. Of those who left Alaska for the States, many ultimately returned to the North. Typical was the experience of Bill Casler, who with his wife and brother, Fred, were in the first group of colonizing farmers from Michigan to reach Palmer. Although successful in developing a productive farm, the Caslers became homesick after two years and turned their place back to the Corporation, which paid them for their improvements. They went back to Michigan, but one winter there was enough, and the next year they were back in Matanuska looking for another Alaska farm. They got a good one, purchased for \$7,000 on a thirty-year contract. In 1942 Casler grossed \$4,000 from the fifteen acres of the place which were in cultivation (the rest of the forty acres were still in uncleared forest). Included in Casler's products were cucumbers, raised in a greenhouse, at 25 cents each; cabbage at $3\frac{1}{8}$ to 8 cents a pound; onions at 7 cents a bunch, and lettuce at \$3.50 a crate. One plot, twenty by forty feet, produced \$400 worth of leaf lettuce.

By 1945, fifty-nine of the original 208 Matanuska colonists remained on farms in the valley.

Every farmer who might think he would like to have a try at Alaska will not be successful or satisfied there. What does it take to make good on a farm in the North? According to the Department of Agriculture's Commissioner for Alaska:

The fundamentals of a successful agriculture—good soil, suitable climate and markets—are found over considerable areas in Alaska. Needed are *families* of a pioneering spirit, who are not afraid of hard work, know something about farm life and possess a small amount of capital to help tide them over the first year or two.

This matter of capital is important. It is impossible to start farming anywhere in the present day without some cash. In Alaska, the following is recommended by the Extension Service of the University of Alaska:

A farm family coming to Alaska to homestead should bring their farming and household equipment with them. Livestock should be brought up after some feed is on hand. On their arrival the farm family should have a minimum of \$2,500 in cash.

The actual cash needed to get started depends upon the individual and upon how much equipment he brings with him. If a farmer has security and proves that he is dependable and honest, short-term loans at low interest are available from the Farm Security Administration, the Matanuska Valley Farmers Cooperating Association, or the Alaska Rural Rehabilitation Corporation. The ARRC advises the settler to arrive in Alaska in late winter or early spring, not later than March 1. All arrangements for a farm to occupy and for farming needs such as seed, fertilizer, machinery, and livestock should have been made before the end of January. It is not advisable to move to Alaska with family and equipment until such arrangements have been made. If possible it is best for one or more members of the family to visit Alaska and make a thorough inspection before choosing a farm and making final farming plans. Special settlers' rates on an initial shipment of farming and household equipment are available from the Alaska Steamship Company at Seattle.

According to the ARRC, it is best for settlers to bring with them the kind of livestock they are interested in, but only high-quality stock. It is practically impossible to purchase such stock

at the present time in Alaska. Furniture, tools, and household equipment should also be brought along, because they are scarce and expensive in Alaska. Equipment which farmers should have, according to the ARRC, includes a tractor (preferred to horses in most parts of Alaska), a truck (1½-ton is a good farm size), plow, cultipacker, grain drill, grain binder—and for potatoes a planter and a digger. Some of the larger items of machinery, such as threshing machines, seed cleaners, and ensilage cutters, are usually available for use in the main agricultural areas.

More than a few hardy souls have carved homes for themselves from the Alaska wilderness with practically no cash outlay, but the failures far outnumber the successes. One such success was scored by Mr. and Mrs. W. C. Graham of Gull Cove, in Southeast Alaska, who began their Alaska pioneering in 1935 when each was past sixty and their total assets consisted of eighty-five cents and a sack of sugar. With the eighty-five cents they bought seeds for a garden. They used the sugar to can wild berries, which they sold, using the proceeds to keep them going while they put in an acre of vegetables and built a rustic home on the small plot on which they had filed for a home site. Seasonal labor in a nearby salmon cannery brought them \$39, which they used for a down payment on a radio, washing machine, and electric light plant. At \$5 a month, big money in such an enterprise as theirs, they finally paid off. The next year they were selling vegetables and nineteen different kinds of canned wild berries from their place. They smoked salmon, caught crabs, and dug clams on the beach. Soon they had a few chickens. The garden was enlarged. After a few years they built a small sawmill and took orders for yellow cedar boat lumber. A year later they opened a modest resort for hunters and fishermen. In five years they had pulled themselves up to a position of security and independence.

Some random Alaska farming notes: Tree fruits have never been successful, but bush fruits, including currants, gooseberries, and red raspberries, produce large yields of excellent quality. Strawberries grow well. Wild berries of many varieties

abound. An Alaska farmer twice took a national prize with his potatoes. Freedom from many pests that plague farmers in most agricultural regions in the States is a noteworthy feature of farming in Alaska. The worst noxious perennial weeds have never been introduced. Plant diseases such as wheat rust and injurious insects such as the potato beetle and pea weevil are absent. Considerable damage has been caused by cutworm, particularly in the Matanuska Valley, where an insect control project was instituted recently by the Department of Agriculture, with the cooperation of the Extension Service.

Many have noted that there are in the North seemingly magical forces which stimulate plant growth. The International Polar Expedition to Point Barrow in 1882 planted lettuce, radish, and mustard seeds in soil which had had no other preparation than to be raked to a depth of four inches. The mustard failed, but in eight days after planting the lettuce and radishes had germinated and three weeks later vegetables of as good quality as could have been produced anywhere were served to the exploring party. These seemingly impossible results were obtained despite the fact that in the 19 days between germination and maturity the daily minimum temperature was 32° or lower for nine days and the maximum reached 50° on only three days.

Whatever the cause, vegetables do grow prodigiously in Alaska. For those with the ambition to farm in the North, the perseverance to keep at it, the energy to work hard and the intelligence to help develop better techniques for an agriculture which is different in many respects from that in the States, there is a rewarding future in putting the midnight sun to work.

OPPORTUNITIES IN LIVESTOCK RAISING

ST. PAUL ISLAND in the Pribilofs, around which Bering Sea freezes every winter, is a more harmonious setting for Arctic foxes and fur seals than for domestic stock. But in 1868 someone had the thought to introduce cattle there. Carefully laid plans to have winter feed waiting for the seasick cows went awry when the hay supply was spoiled by the Aleut residents, who did not know how to cure it. So the cattle had to graze out all winter. They not only did this successfully, but grew sleek and fat, as did lambs under the same treatment. At Unalaska the same year a United States Coast Survey exploring party was surprised to find cattle which were fattened on the native grasses and which produced delicate beef and abundant milk. Even earlier, the Russians had brought cattle to graze on the lush pastures they had discovered at Kodiak, Kenai, Ninilchik, Sitka, and Kalsin Bay. The progeny of these animals may still be seen in Alaska today. In 1886 five shorthorn cows and a bull were liberated on Chirikof Island, between Kodiak and the Shumagins, by a whaling vessel. Later a Jersey bull was set free on the same island. Since that time they have had no care from men, but they have taken such good care of themselves that they have increased to a herd variously estimated at from 1,000 to 3,000 head.

There are other stories indicating the ability of Alaska pasture to maintain livestock. Tom Riggs, later to become Alaska's Governor, used pack horses in laying out the International Boundary between Canada and Alaska. Each night the horses were turned loose to rustle their own forage, and each morning, even on the shores of the Arctic Ocean, they were found lying down and resting, their stomachs filled. For six winters, the party's horses were ranged out during the long winter and in the spring, with few exceptions, they were rounded up in fairly good shape. Riggs believes that if he had been able to pick the best grazing

grounds the animals would have done as well as in sections of the Western States where winter ranging obtains. Elsewhere, an early traveler in Alaska turned out six head of mules, expecting them to die during the winter. But in the spring, five were found in good condition. The sixth had been mistaken for a moose and shot by a native. Another old horse, who had been on his own for several years, was killed far above the Arctic Circle by a native who had never seen a horse before. Even today, there are a number of pack horses in interior Alaska which have gone wild and are getting along famously on native pasture.

Grazing livestock is a perfectly feasible proposition in many sections of Alaska. As early as 1906 the Alaska Experiment Station established a small Galloway herd at Kenai, on Cook Inlet. Although it thrived there on native pasture, because of transportation difficulties the herd was moved a year later to Kodiak, where it did equally well, demonstrating that a hardy beef breed could be maintained cheaply on the pastures of southwestern Alaska. Later experiments with dairy cattle were also encouraging. Dairying has, of course, become a successful enterprise everywhere in Alaska where a market is available.

Meat production was of little relative importance in Alaska agriculture before the war, but there are many indications that this is an activity which will be pursued much more vigorously in the future. Ability to raise winter feed locally is the chief limiting factor. Summer grazing is no problem. The grazing season is very short, however, in most sections of Alaska. Areas which have a longer grazing season tend to be the ones presenting the greatest winter feed problems, due to their more abundant rainfall, which makes the curing of hay difficult. Special facilities, such as slaughterhouses and packing houses, required to prepare meat products for the market, are lacking in Alaska farming regions. An interesting wartime development has been the use of certain islands of southwestern Alaska for grazing beef cattle which find a market in the various army camps of the area. These islands include Sitkalidak, Kodiak, and Chirikof.

One beef enterprise now furnishing meat is the Chirikof Cattle Company, which is slaughtering the wild cattle already mentioned as having descended from the half dozen head liberated on Chirikof Island by a whaling vessel. The company has a lease on the entire island and has contracts with both army and navy to supply a large quantity of beef to bases on Kodiak Island. In addition to the cattle on Chirikof, the company has cattle and 800 sheep on Sitkalidak Island, just off Kodiak. Reduction of the cattle population on Chirikof by from five hundred to six hundred head will be a good thing for the herd, which has grown too large in relation to the number of cows. Grass on the island is plentiful, but there seems to be a limiting factor, probably winter feed, which has kept the herd to its present size. Beef delivered from Sitkalidak Island to the army cooler at Kodiak has all been graded good or better. The meat actually looked better than the same grade shipped from the States. A careful examination showed Alaska yearling steer carcasses to be exceptionally well covered, and though this covering over the back was not so thick as on grain-fed cattle, it extended well down on the round. Even the old cow carcasses were exceptionally smoothly covered, with little tendency to patchiness.

Elsewhere in Alaska, the production of beef probably can be made profitable wherever farm land adjoins open range which may be used for summer grazing. Grass-fattened beef, of course, must meet steep competition from corn-fed, imported beef. In the Matanuska Valley there is extensive summer range in the Talkeetna Mountains north of Palmer, but the winter feeding season is long. There is little good outdoor grazing after the middle of October, and hay and grain are expensive. In the Tanana Valley, summer pasture is available only four or five months of the year, but oats, barley, peas, vetch, native grasses and brome grass may be grown for winter feed more readily than in the Matanuska. This feeding period would require two and a half to three tons of hay per head for range cattle, or eight to nine tons of ensilage. Promising localities are the Goodpaster-

Big Delta region on the Alaska Highway and the Dunbar district along the Alaska Railroad between Fairbanks and Nenana.

One fairly ambitious beef cattle venture in the Talkeetna foothills north of Matanuska was essayed in 1935 by the late A. A. Shonbeck, prominent Anchorage resident. He imported 300 "Short Yearlings" with the intention of establishing breeding herds of Shorthorn and Hereford cattle. After summering on the foothill range, which was described by cowboys as a "cow heaven," the cattle were to have been wintered on hay or grazed on tide flats of upper Cook Inlet, where there are from six thousand to ten thousand acres suited to grazing or hay production. In the early winter, a strike tied up all shipping to Alaska and Shonbeck was persuaded to kill his entire herd to supply meat to the Territory. The cattle had been shipped in in May. Calves which were born on the boat or shortly after landing sold for \$44.50 a head in the fall.

The Susitna Valley, west of the Matanuska, recommends itself for stock raising because of its somewhat longer growing season than in locations on the other side of the Alaska Range. Along the tributaries of the Susitna, open meadows are found which could produce hay or ensilage for winter forage. Native grass grows abundantly. The stockman in this section should plan to have at least two tons of winter feed per head.

Kenai Peninsula, as soon as it is provided with year-round transportation connections with the populated areas of South-Central Alaska, should be a good region for livestock production. One 73-year-old sourdough has kept a herd of beef cattle at the head of Kachemak Bay over a period of twenty years, the size of the herd being limited by the amount of winter feed which could be provided by one man working alone with very crude equipment. The rolling hills back of Homer are covered with an excellent growth of grass, providing good pasture. The winter feeding period in this area varies from five to eight months.

Considerable possibilities seem to exist in the southwestern islands, including Kodiak. Here cattle need be fed very little,

if at all, over the winter. The beach rye, *Elymus mollis*, furnishes winter grazing, though the number of stock which may be kept on it is limited. Stockmen in this area favor providing some hay for feeding during March and early April. The large bear on Kodiak Island have made most stock ventures there unsuccessful. As has been mentioned, most of Kodiak at present is reserved against settlement, but may be opened up after the war.

Southeast Alaska offers very little opportunity to the stockman. Except in small grassy deltas and tide flats right on the coast, no suitable range is available. Land at Gustavus, the best grazing area in the Panhandle, has been withdrawn as an enlargement of Glacier Bay National Monument. Although year-round grazing is usually possible in areas of Southeast Alaska, an emergency feed ration should always be available in case of heavy snows. Winter feed is difficult to prepare, owing to the excessive rainfall of the region.

Haying is a serious problem in Alaska, since a large share of the annual precipitation comes in the months from June to September. This leaves little opportunity to "make hay while the sun shines" in the traditional manner. Some special techniques, however, have been and are being worked out. One method is to hang the fodder on stakes to dry, so that it is up off the ground and where the wind can take part in the process. Another is to cut the fodder materials when green and chop them into a silo. The development of a practical grass silage harvester might mean the difference between profit and loss in cattle raising in Alaska.

Grazing lands in the Territory are amply supplied with good water. Another advantage is the absence of undesirable forms of bacteria, owing to the relatively low temperature of Alaska summers. Mosquitoes are a serious menace in some of the interior valleys, plaguing livestock until they are hardly able to maintain themselves. Relative freedom from this pest is found in hill sections which are not timbered.

The Shorthorn is the most common beef type in the Matanuska

Valley, while the Galloways and Herefords have been preferred in the southwestern islands. Comparing these three breeds as beef producers and on their ability to maintain themselves on native grasses and pasturage, the experiment station at Matanuska ranked the Galloways as the best rustlers, a Galloway-Holstein cross second, Shorthorns third and pure Holsteins fourth.

Except in the Matanuska Valley, the beef-cattle producer in Alaska has to be his own processor, under present conditions. Transportation difficulties make it impracticable to ship live cattle to any central place for slaughtering. The development of suitable processing facilities is one of the first needs of a sound beef-production industry in Alaska.

In the early days, many cattle were traileed to the mining camps of Interior Alaska from Valdez on the coast. Inquiry has already been made as to the feasibility of trailing cattle over the Alaska Highway. Although the distance is great, the feat probably would be no more difficult than that which was accomplished over the Old Chisholm Trail when Texas cattlemen sought new range in the North. Such a drive would be disastrous, however, unless preparations were made beforehand for winter feed at the end of the road.

One final piece of advice, offered by I. M. C. Anderson, livestock specialist and Alaska supervisor for the Farm Security Administration:

The old system of going into the cattle business with a start of a good cayuse and a long rope is hardly practical in the Territory because the cattle are not here, and there are no big operators upon whom the rustler might prey. That kind of business is just not done in Alaska.

Sheep have been ranged for many years on the Aleutian Islands, most successfully by the Aleutian Livestock Company on Umnak. A first band of 1,000 was moved to the island at government expense in 1923. Many lessons had to be learned the

hard way in the new environment. Grass, for all its lush growth, did not prove to be as nutritious as it appeared. Many lambs died of starvation in the spring. Winter feed could not be prepared, because of the everlasting dampness. Many sheep perished after shearing, worn down by the ceaseless cold winds. The severe winter of 1937-38 killed sheep by the thousand. Lack of adequate transportation has always been a serious handicap. But, little by little, a successful enterprise was developed. The wool, because of its length and thickness, always brings top prices. The clip averages $11\frac{1}{2}$ pounds to the sheep. Umnak wool is free from dirt, burrs, and other foreign matter. The severe climate prevents the spread of ticks and other parasites.

Just before the war, the company had built up a profitable flock of 13,000. Wool exports to the States were valued at about \$50,000. Everything looked very promising. Then the war, and the imminence of the enemy, caused evacuation of the native herdsman. Because they were not sheared, many of the sheep finally froze to the ground when they bedded down at night, and were unable to kick free. When the sheepmen could return to the island they found that some 7,000 animals had perished. But the enterprising management was not discouraged, and in 1944 it shipped north 800 Romney sheep as breeding stock to replenish the flocks and keep the venture going.

Sheep are kept by some farmers in the Matanuska Valley, where the Hampshire and Columbia breeds are successful. Meat and wool are of good quality, and lambs marketed directly off the range at a weight of around forty pounds dressed are in much demand at good prices. An area of about two hundred square miles on the north slope of the Alaska Range near Healy is thought to be good potential sheep range. Snow never lies on the ground longer than three to seven days; wind-scouring on the exposed slope clears it off. Carrying capacity is estimated at 150 head per square mile. Native hay can be produced locally to supplement winter range forage.

Even in Southeast Alaska, at least one successful farmer sees

good opportunities in sheep. Harvey Matney, ranching in the Unuk Valley, forty miles from Ketchikan, has this to say:

I moved sheep into this valley as an experiment and it panned out 100 per cent perfect. Sheep thrive here. Forage is plentiful throughout the year and the acres are free. You can import enough baled hay to carry the animals through one of our terrific blizzards, and aside from that you don't have to worry about them. I know! I've done it.

Aside from cattle and sheep, livestock which can be raised successfully in Alaska includes hogs, goats, and an animal symbolic of the North—reindeer. No new opportunities for reindeer husbandry exist in Alaska at the present time, however. These animals now are reserved exclusively for the use of Alaska natives, and an act of Congress prohibits their ownership by others. So that no one need weep over this, it should be pointed out that a number of companies of whites which went into the reindeer business several decades ago with hopes of commercial success felt themselves fortunate at last to sell the last of their deer to the Federal Government, to be returned to the natives. The reindeer is admirably suited to furnish food, clothing, and handicraft material to the Eskimo, much more admirably than it could ever be as a basis for commercial exploitation.

Speaking particularly of the opportunities in cattle raising, but with sound sense applicable to all livestock possibilities in Alaska, a man who knows thoroughly both the livestock game and Alaska, recently delivered himself as follows:

It took a hardy type of men with tough cayuses to establish the cattle business in the West. Those that develop a cattle business in Alaska will have to be just as hardy and a little bit more willing to fight the elements and they can't do all their work on horseback. Alaska is no place for the parasite. Each individual is measured by his own ability. Only the vigorous survive, and this applies to both man and beast.

OPPORTUNITIES IN THE FISHERIES

ALASKA's greatest industry from the wealth-producing and employment-creating standpoint is fishing and the processing of fish. Fortunately it is an industry based upon a renewable resource, which, under conservation policies long since put into effect, should continue forever to contribute importantly to the Alaska economy. Unlike minerals, which when taken from the earth are gone for all time, the fish return to the Alaska fishing grounds year after year, in numbers which may fluctuate unaccountably between one season and the next but which do not appear to be diminishing over the long term.

Although the runs of salmon and the abundance of other fish are not declining in volume, neither are they increasing. The fisheries of Alaska thus may be said to have been stabilized at a level from which they probably will never depart very widely. This might be thought to limit fisheries employment to about the level which has prevailed in recent years, but fortunately this is not the case, and there are numerous promising opportunities substantially to expand employment in the Alaska fisheries. This may be done, without endangering the basic resource, by achieving a more complete utilization of the fish taken from Alaska waters, by producing a wider variety of fisheries products, and by extending fishing to some of the many species which are not now used commercially at all.

Alaska produces something like 88 per cent of the nation's canned salmon pack, and 72 per cent of that of all North America. Although figures on the Asiatic pack have not been available since 1939, it is sufficiently small to give Alaska a position of undisputed world dominance in the production of this valuable food product. The average annual pack of canned salmon in Alaska is more than six million cases of forty-eight one-

pound cans, worth about \$40,000,000. Employment is furnished to about 25,000 persons, and wages total about \$11,000,000. More non-residents than residents are employed, and about as much in wages is paid outside Alaska as in. This is due to the highly seasonal nature of the industry, which makes it necessary to import many workers from the States for the brief period of peak operations.

The salmon-fishing season lasts only from a month to six weeks, varying in length according to the district. In the famous Bristol Bay fishery, the season extends only thirty days. In other districts it averages five or six weeks. Even taking into account the work of getting ready for operation and of closing up following completion of the pack, the activities of the industry throughout Alaska are compacted into a period of about three months, from the first of June to the last of August. The fish can be caught only in the brief period in which they are migrating from the open sea to protected inside waters preparatory to entering the streams to spawn. Before this time they are too widely dispersed to be taken, and after entering fresh water they rapidly decline in quality. The life span of the Pacific salmon is two, three, or four years, depending upon the species. Most of this period is spent in salt water, and it is a remarkable fact that almost nothing is known of the exact whereabouts or habits of the fish during this time.

A month or two prior to the time of spawning, the mature salmon begin to reappear along the shores and in the sheltered channels and bays, gradually schooling up at the mouths of the streams, which, at the proper moment, they enter and ascend to spawn. After spawning, all Pacific salmon die. The eggs are hatched in fresh water, and the early days of the salmon are spent in the streams. Salmon migrate back to salt water after attaining "fingerling" size, and at the end of the life cycle return to the identical stream, often hundreds of miles from the sea, to spawn and die.

Five varieties are caught in Alaska: the king salmon (the same

fish as the chinook of the Columbia River and spring of Puget Sound) averages about twenty-two pounds; the red salmon (known elsewhere as the sockeye or blueback) averages about seven pounds; the coho, silver or medium red salmon averages about eight pounds; the pink or humpback averages about four pounds, and the chum, keta, or dog salmon averages about nine pounds. The largest salmon ever taken in Alaska was a king caught in 1939 and weighing 120 pounds.

Salmon canning is an industry of feverish and even thrilling activity, in which there is always a large element of chance, with no one knowing in advance exactly when the salmon will appear or how large the run will be. Fishermen and cannery men can only make their preparations on the basis of past experience, and be ready to work night and day, if necessary, to handle the pack while the run is on. The fish are taken by various methods, all closely regulated by the Federal Government. More are caught in traps than any other way. Alaska fish traps are of two types, driven and floating. A trap is a large and expensive apparatus, consisting of wire netting suspended from piling on the surface in such a manner that salmon, following the "lead" of the net, are conducted into a maze, with a narrow opening through which they cannot escape. The trap is brailed every day or two by cannery tenders. The number and location of fish traps are rigidly controlled, and a fish trap site is a highly prized possession.

As an institution, the fish trap is under constant political attack by those who fish with less efficient types of gear. For many years, the fish trap was the prime political issue of Alaska elections and legislative sessions. A popular platform plank in Alaska is always the abolition of fish traps, and though many an office holder has been elected on this issue, and although a few traps are eliminated each year, traps still take as large a share of the total salmon catch as they always did. There is much to be said for the fish trap as a technical device; and just as much to be said against it from the social standpoint, since it is a destroyer of employment and because it represents the allocation to a few

of a special advantage in reaping a resource which should be the common possession of all. Of 434 fish traps operated in the 1944 season, 245 were owned by eight large canning concerns. One company owned sixty and another fifty-eight—between them well over a fourth of all traps in Alaska. Most revealing of all is the fact that 396 or 91 per cent were owned by non-residents.

Another important fishing method is purse seining, by which a school of fish is encircled by a net played out from a boat, the ends of the net then being joined and the bottom closed, so that the fish can be dipped into the boat. Gill netting is the method used in Bristol Bay; a net with large apertures is floated perpendicularly in the water, the salmon swimming into it and becoming entangled at the gills when their heads pass through. Trolling is employed to catch king or coho salmon, the only species which will take bait. The power troller uses four long poles extending from his gas boat; the hand troller in his row-boat is the lowest common denominator of manpower and gear.

The salmon cannery is an efficient high-speed industrial plant, where the salmon are sorted by species, dressed and cleaned by an ingenious machine called the Iron Chink, packed in cans, and cooked in a large retort. The familiar canned product is sold throughout the world, and Alaska salmon is famous for its high quality. The red salmon brings the highest market price, not because it is superior but because of a consumer preference which was developed many years ago. One enterprising packer of pink salmon once attempted unsuccessfully to overcome this prejudice by stating on his label: "This fish is guaranteed not to turn red in the can."

In order to conserve manpower, equipment, and shipping facilities during wartime, the canned salmon industry in Alaska has been subjected to a streamlined "concentration" scheme for the past three seasons. Under this plan, operations were concentrated in about eighty canneries instead of the usual 120, with operators pooling facilities from neighboring plants in the ones

selected to operate. Under this arrangement, a larger than normal pack was put up in 1943, though 1944 and 1945 packs fell off due to disappointing runs of fish. Labor quotas established in 1944 for the first time by the Coordinator of Fisheries and the War Manpower Commission provided for employment of 4,700 residents and 7,800 non-residents. Also for the first time, the large canning concerns actively recruited workers in Alaska. Theretofore all hiring had been done in the States.

Salmon canning is quite definitely a "big business" enterprise. Of 140 fish canning and processing plants operating in Alaska in 1939, only thirty-nine reported a pack worth less than \$100,000, while eighty packed between \$100,000 and \$500,000 worth of products and twenty-one had packs exceeding \$500,000. Employment for the year varied from less than 500 in February to almost 15,000 in July.

Some insight into the profit possibilities in canning salmon was furnished in a recent court case in Seattle, where it was testified that a company started in 1942 with less than \$17,000 gained a profit of more than \$100,000 in a single season's operation at Uga-shik on Bristol Bay.

Salmon from Alaska are marketed in numerous ways aside from in the tin. Some are mild-cured, pickled, frozen, dried, dry-salted, or sold fresh. The value of salmon exported in these forms, however, averages less than \$1,750,000 a year, as compared with the \$40,000,000 canned product.

Millions of dollars worth of food and industrial products are wasted annually in Alaska through failure to extract by-products from the 30 per cent of the salmon which is discarded in canning. Heads, tails, fins, and entrails now wasted would yield from fifteen to twenty gallons of salmon oil per ton, oil which has commercial value in stock and poultry feeds, for frying purposes, combined with metals in industrial soaps, as an ingredient in paints and varnishes, for tanning, as a lubricating agent in the cutting and cooling of metals, and in the manufacture of linoleum and oil cloth. It is estimated that Alaska canneries

alone are wasting enough Vitamin A units to furnish one-tenth of the nation's requirements and enough Vitamin D to supply one-twentieth of our needs. Only \$40,000 worth of salmon oil and \$40,000 worth of meal were salvaged in Alaska in 1942, at one small plant at Ketchikan. The large canneries have never wanted to be bothered with extracting by-products. A good opportunity exists for half a dozen enterprising concerns to gather waste materials in the principal canning areas and convert them into oil and meal. Recently plans were announced for the establishment of a \$125,000 plant at Craig, Prince of Wales Island, to produce salmon oil and meal.

Another product which might be made from materials now wasted in the Alaska fishery is fish leather. Alaska possesses an advantage in that the fish of the region are fresh when brought ashore. Skin fibers break down when the catch lies in boats for a long trip from the banks. For this reason, most of the fish leather used in the United States is imported from Iceland, where fishing is on a day-to-day basis.

Halibut fishing is another important industry in Alaska. Most of the halibut are caught far offshore in open, stormy waters. These fish, which reach a weight of as much as 450 pounds, are all taken by hook and line from boats which lay out "skates" of gear in water as deep as three hundred fathoms, the skate being a line with many hooks, each baited with a herring. A record catch of 100,000 pounds of halibut in nine days of fishing was made by one schooner operating off Kodiak in 1944. Even after paying all expenses and assigning the customary one-fifth of the catch to the boat, the captain and ten members of the crew collected shares of about \$1,000 apiece for the voyage. Halibut are shipped either fresh in ice or after being frozen solid in the cold storage plants. A few have been canned at one plant the past two years. Important by-products of this fishery are livers and viscera, which are used in the manufacture of vitamin products. Halibut fishing in Alaska furnishes employment to about 1,200 men and produces about \$2,000,000 worth of fish and by-products. "Hali-

but cheeks," which are literally just that, are salvaged for local sale, usually by a lone enterpriser at each cold storage location, who deftly cuts these morsels from the heads which are lopped from the fish before freezing.

Fishing for halibut is regulated by international treaty and by a voluntary curtailment plan instituted by fishermen and vessel owners for the dual purpose of protecting the market against periodic oversupply and effecting a fair division of the total catch allowable under the quota which is set each year by an international commission. One disturbing trend in the halibut fishery is the gradual shortening of the season year by year. In the last "normal" year before the war it lasted only from the first of April to the middle of September. This shrinking of the season is due to increasing efficiency of the halibut boats in catching the available quota, as well as to the entrance of more and more boats into the fishery. The halibut stocks, once sadly depleted by overfishing, have been built back to a healthy condition by the efforts of the international commission and the cooperation of the industry. An increase of 1,500,000 pounds (to a total of 54,500,000) was permitted in the 1945 catch.

Little opportunity appears to exist for expanding employment in halibut fishing, except as the resource becomes more abundant. Possibilities do exist, however, for the construction of additional cold-storage plants, Kodiak being a good location for such a venture, with its abundant deep-sea resources of halibut, scrap fish, sole, red snapper, and other varieties indicated by a recent government survey. A four-million-pound capacity cold-storage plant has been opened at Pelican City in Southeast Alaska as part of the development of an integrated fishing port.

The catch of herring in Alaska has fluctuated widely over the years. Never reaching 40,000,000 pounds prior to 1918, it amounted to 180,000,000 pounds by 1925, and in 1938 reached a record 217,000,000 pounds. In more recent years the catch has declined, due to a combination of unfavorable factors, including

occasional failure of the run in one district or another, complete cessation of activities in Southeast Alaska for several years, and military restrictions on fishing in advanced areas. Normally the industry in Alaska gives employment to about 700 men and produces a pack worth around \$2,000,000. Most of the herring taken in Alaska are reduced to meal and oil, which are used for stock and poultry feed and in soap, paint, linoleum, and shortening manufacture.

Reduced in this manner, the herring have only about one-third the value, and the fishery gives only a small fraction of the employment it would if the fish were smoked, kippered, or canned for human food. Relatively small amounts of Alaska herring are Scotch-cured, roused or dry-salted, while a fairly substantial quantity is sold fresh, frozen, or salted for halibut bait. Half a dozen plants engage in Scotch-curing, a few produce bloater stock, and one company has been canning herring on an experimental basis.

A striking comparison, suggesting what might be done with the Alaska herring resource under favorable conditions, shows that the nation in 1938 imported about 75,000,000 pounds of herring products from abroad, almost exactly equal to the Alaska production in that year. The imported fish, however, were mostly pickled, salted, smoked, kippered, or in the form of sardines, and had a total value of \$6,000,000. The Alaska pack, mostly oil, meal, and bait, was worth only \$2,000,000. The Scotch-curing method, which is perfectly feasible in Alaska, was introduced into the Territory in 1917 by the Bureau of Fisheries. Although an attractive and valuable pack is produced by this method, Scotch-curing has been outstripped and overshadowed by large-volume reduction methods, which produce a far less valuable product. In producing salt and pickled herring, the Alaska industry must compete with importations from Great Britain, Canada, Newfoundland, Labrador, Holland, Norway and Iceland, but there is no reason why it should not compete success-

fully, providing packing processes are carefully planned and supervised and an aggressive sales policy is pushed in the United States market.

Before the war, only about five per cent of domestic consumption of cured herring was supplied by Alaska, and during the war years, when the industry might have been built up remarkably due to interruption of importations from abroad, no concerted effort has been made to achieve this end. Here is an outstanding opportunity materially to increase employment, while making no increased drain on the fishery resource. Even reviving the Alaska herring curing industry to the comparatively modest level of operations which prevailed during and immediately following World War I would give employment to five hundred saltery workers, and would provide annually forty thousand man-hours of longshore labor in handling the salt herring products, five hundred man-hours in handling salt, ten thousand man-hours in salt manufacture, fifty thousand man-hours in barrel manufacture, \$150,000 in revenue to transportation companies, and a considerable amount of labor in boat building and gear manufacturing. Employment in fishing itself would be greatly expanded, since the present purse-seining methods, which require few men, would be supplanted by gill netting. (Herring used for salting and pickling have to be large-sized, and net fishing affords selectivity.)

Not all herring are suitable for curing, but it is estimated that fully ten per cent of the total catch could be treated in this way. Production of cured herring in 1943 amounted to but 4,500 barrels, as compared with 145,000 barrels in 1922. Small as it was, the 1943 production was more than double that of 1942, and came almost entirely from the Kodiak area, with one small plant operating on Prince William Sound and one in Southeast Alaska. Although no herring are canned commercially in Alaska, neighboring British Columbia uses identical fishery resources to produce more than a million cases a year at twenty

canneries. A ton of herring in British Columbia produces twenty cases of canned product, valued at more than \$4 per case.

A study of the abundance of herring in Alaska, conducted for several years under the auspices of the Fish and Wildlife Service, indicates that formerly depleted populations in Southeast Alaska and Prince William Sound are rebuilding satisfactorily, permitting somewhat more intensive fishing. An additional field for exploitation is suggested by the report from a fathometer-equipped boat near Kodiak a year ago that enormous schools of herring were located at depths of from thirty to sixty fathoms, too deep for gear now in use in Alaska.

Codfish have been caught off the Alaska coast for many years, but this activity has never contributed very much to the Alaska economy, since fishing has been conducted from large sailing vessels which moved directly from the fishing banks to various Pacific Coast ports without so much as landing in the Territory. Several famous old vessels have participated in this fishery. The greatest catch for a single voyage, which still stands as a world's record, was 450,000 cod taken by one of these ships in 1933. The annual catch is around 3,000,000 pounds, and there is a sufficient supply of fish to support a much larger catch. In addition to this offshore fishery, which employs about a hundred persons, some fishing is conducted by independent fishermen from shore stations in the Shumagin, Sanak, and Aleutian Islands. From twenty to fifty men have been engaged in this activity in recent years, with the annual pack worth from \$5,000 to \$20,000, in the form of dry-salted and pickled cod and stockfish.

Shellfish occur in Alaska waters in fair abundance, and good opportunity is believed to exist for expanding their utilization. The most important product heretofore has been the high-quality razor clam, which is found only on a few sand beaches in Oregon, Washington, British Columbia, and Alaska. The Alaska razor clams come from the Cordova vicinity, where the pack amounts to around 45,000 cases a year, giving employment to

about 500 in a dozen canneries and on the beaches. A small pack of hardshell (butter) clams is canned in Southeast Alaska. This industry, which was much more active in Alaska some years ago, has great possibilities for growth.

Shrimp of high quality are caught in Southeast Alaska, and processed by several small plants which distribute them in cold-pack or frozen form. Total annual production runs around 450,000 pounds, worth \$175,000 and gives employment to about 200. Experimental trawling in hitherto unfished waters near Ketchikan recently indicated that shrimp fishing may be considerably expanded in Alaska. Some of the shrimp taken in the recent tests were of very large size and could be marketed as prawns. Only a very small quantity of Alaska shrimp have ever been canned, and there appears to be little probability that canned Alaska shrimp could compete in the broad national market with the Louisiana shrimp, which can be produced at lower cost. Alaska shrimp go principally into cocktails or salads in eating places in the Pacific Coast States.

Oysters, although known to attain high quality in Alaska waters, which present many ideal locations for planting, are cultivated only on a very small scale, with an annual production of only a few hundred gallons. This production has been increasing gradually over the past few years, however. Additional oyster bottoms have been opened for leasing on nominal terms, and the development of a commercial industry is a definite possibility for the post-war years when oyster seed is again available from the Orient. Minor shellfish species capable of some development in Alaska include abalone, mussels, and scallops.

The crab fishery is one of the really promising fields for further commercial exploitation in Alaska. A ready market for canned crabmeat exists in the United States, which before the war depended very heavily upon imports from Japan, whose fishermen actually took crabs in Alaska waters, while American fishermen ignored this important resource. Throughout the 1930's the nation was buying Japanese-packed crabmeat to the

tune of better than \$3,000,000 per year. Two types of crabs occur in Alaska. The Dungeness crab is caught in shallow water in Southeast Alaska and Prince William Sound, in both of which districts small canneries have existed for many years, producing an annual pack of around 300,000 pounds, worth about \$100,000 and giving employment to some 100 persons.

The other type of crab, which was not fished commercially in Alaska until a few years ago, is the king crab, a giant spiderlike creature which reaches the great size of four feet from "wing tip to wing tip" and which occurs in deep water from the Alaska Peninsula to Southeast Alaska, and in Bering Sea, where its abundance is believed to be greatest. It is this crab which the Japanese were catching in Alaska waters, packing in floating canneries and selling in the United States market. The Fish and Wildlife Service made a study of the king crab fishing areas and put up an experimental pack a few years ago to determine the possibilities for commercial exploitation of the species. These possibilities were considered excellent, and since 1943 several operators have been in limited commercial production. Canneries have been established at Kodiak, Seldovia, and Homer to handle this product. When boats, gear, and cannery equipment become available after the war, a considerable expansion of this fishery should take place.

Minor fish species which have been taken increasingly in recent years, and which promise to become an important factor in Alaska fishery production in the future, include the sablefish (black cod), sole, rockfish, "ling cod," flounders, and various other of the so-called ground fish. The Alaska sablefish catch of several million pounds per year is marketed fresh, frozen, pickled, and in quick-frozen fillets. The livers and viscera also have value in vitamin products. The total of other "miscellaneous" fish frozen in Alaska approaches the million-pound mark. Appearance on the market recently of such products as smoke-cured cod and kippered ling cod, as well as the wide variety of frozen fillets, is only a token of what may be expected in the

near future. Along with an expanding market, more efficient fishing techniques have developed to increase the utilization of these species which exist in apparent abundance in Alaska but which have been almost totally neglected in the past. Among these developments are trawling and the appearance of a combination fishing craft which permits the fisherman to engage in several distinct fisheries whose peaks of productivity come at different times of the year.

Trawling is a method of fishing old in the Atlantic but only just coming into prominence in the Pacific. Trawling was extended to Southeast Alaska in a small way in 1943, and prospecting of new grounds in this section took place in the summer of 1944. In the past ten years, the quantity of trawl-caught fish landed in Washington and Oregon multiplied 190 times. As yet, the Gulf of Alaska has not been touched, and Bering Sea is described as the largest trawlable body of water in the world. Working at untouched depths of from one hundred to two hundred fathoms, it is estimated that a billion pounds of fish a year could be trawled from the North Pacific.

So promising is this new development that an expert of the Fish and Wildlife Service was quoted as saying at Juneau in the summer of 1944 that otter trawling "may be one of the major, if not the major, fishing industry in Alaska waters in the future." When the prospect can be seen for a brand new fishing activity which would match salmon canning, Alaska's foremost industry, in the creation of wealth and employment, it can be realized why Alaska beckons thousands as the land of opportunity.

The liver fishery is another promising field for expansion. Some utilization is certain to be made of the vitamin-rich sharks and dogfish which abound in Alaska waters. The rapid dwindling in catches of soupfin sharks off the coasts of Washington, Oregon, and California in the last year should stimulate a more intensive fishery for the Alaska vitamin liver species. The huge basking shark occurs in Alaska waters, and is of considerable value because of the enormous size of its liver. Aside from their

liver value, Alaska sharks can furnish meat which is attractive and palatable. A year or so ago plans were announced for formation of a company to market a million pounds of Alaska shark meat per month. Just south of Alaska in the Queen Charlotte Islands, almost unbelievably rich dogfish grounds were discovered during 1944. In seven weeks production ran to a million pounds of livers from ten million pounds of fish. With several hundred boats participating, individual vessels made as much as \$3,000 in a single night's fishing. One gill-net boat took \$18,000 worth of fish in less than a week.

Opportunities for new enterprise and new employment in the fisheries industry in Alaska are being stimulated by the work of a Fisheries Experimental Laboratory at Ketchikan, supported jointly by the Federal and Territorial governments. The purposes of this laboratory are to aid the development of new fisheries products, to utilize what is now waste in the canning and processing of fish, and to develop new fisheries by-products. Some additional opportunity also lies in the direction of extending commercial fishing to areas of Alaska heretofore neglected. For instance, five species of salmon are found in the waters off Nome, halibut and cod banks are close by, and crabs are caught through the ice in winter, yet there has been no commercial fishery development in this area, except for the packing of a few herring at Golovnin Bay. Similarly, many of the familiar species of Alaska fish, including salmon, can be caught in the Arctic Ocean.

OPPORTUNITIES IN MINING

ALASKA is by tradition the land of the miner and prospector. The great gold rushes of the closing years of the nineteenth century not only left an indelible impression on Alaska; they also made an indelible impression on the mind of the nation. Gold is second only to salmon in the hierarchy of Alaska industry, and it is likely that the mining of gold will be of great importance in the development of the Territory for many years to come. The immediate post-war prospects of the mining industry in Alaska are not at all clear or easy to analyze. Potentially, the mining industry probably holds more possibility of expansion than any other. For instance, the development of a major oil field or the significant discovery of any one of several other minerals would bring a dramatic increase in employment, another "gold rush." At the present moment, however, such possibilities are "birds in the bush." The "bird in the hand" which Alaska actually has is a gold-mining industry temporarily virtually closed down and facing great uncertainty.

The importance of gold, at least its importance in the past, can be appreciated from the citing of a few statistics. In minerals alone Alaska has produced more than a hundred times its purchase price. In the period 1880-1940 minerals valued at \$831,000,000 were supplied to the nation from the Territory's mines. More than two-thirds of this was gold; a little more than one-fourth was copper, while silver, coal, lead, tin, platinum, mercury, antimony, limestone, marble, and all other minerals accounted altogether for only about five per cent of the total. Since the closing of the Kennecott Copper mines in 1938, copper production has practically ceased, increasing even more decisively the industry's—and Alaska's—dependence on gold. Just before the war, gold production (in terms of current dollars)

was at an all-time high, though the quantity produced was considerably below that for any year between 1905 and 1916. The reduction in the gold content of the dollar in 1935 had the effect of raising the price of gold from \$20.67 to \$35 per fine ounce.

So the outlook for mineral production in Alaska after the war depends very largely on still-to-be-determined national and world policies in relation to gold. If the gold price is sufficiently high there is no doubt but what considerable mining activity can be expected to resume in Alaska. There is still lots of gold in the hills—just how much, no one can even estimate, but Dr. Philip Smith, Chief of the Alaska section of the United States Geological Survey, ventured the guess a few years ago that reserves amounted to twice as much as the amount of placer gold already recovered. Reserves in the lodes are believed by most geologists to far exceed those in the placers.

The effect of the war on Alaska's mining industry was devastating. The industry practically ceased to exist, being closed down as non-essential by a War Production Board order in 1942. A few operations continued, it is true. Some of the very small gold mines were not required to suspend and one large mine, the Alaska Juneau, continued to operate under a special exception which will be discussed later on. Coal, platinum, chromite, tin, and mercury production continued unhindered by the WPB order, and in some cases operations were accelerated. But in Alaska, as a consequence of the very great specialization in gold mining, activity in these other minerals could not begin to bring the industry as a whole up to the normal levels.

Recently, with Alaska out of the war-zone category and the nation "over the hump" on war production, policies affecting mine operation have been liberalized in Alaska. A year after the first drastic restriction, regulations were broadened to permit placer gold mines employing as many as seven men, as compared with the previous limit of five, to operate under certain conditions. In 1944 the WPB authorized several large operations to resume, one employing 200 men, but operating conditions re-

mained difficult. Only men not required in essential war activities could be employed, and only those critical materials which were already on hand or obtainable second-hand could be used in mining operations. By June 30 of 1944, 75 gold mining operations employing a total of 771 men had been authorized. Gold production in 1944 amounted to \$1,779,400, only seven per cent of the 1941 total. The quantity of gold produced was the smallest since 1897, the year before the gold rush.

How quickly the gold-mining industry in Alaska will get back into substantial production, even now that all restrictions have terminated with the war, is a difficult question. Wartime increases in the general price and wage level probably will not recede for some years. This will make it difficult for marginal gold mines to reopen, unless there should be another increase in the price of gold. Discussion, in Congress and out, of proposals to change the gold content of the dollar are followed by Alaskans with personal interest. Alaska without some gold-mining activity is unthinkable. The large placer operators for the most part have kept small crews on the job to maintain dredges and other equipment, so that operations can be resumed on fairly short notice. Lack of men kept some dredges from resuming in the summer of 1944, even though permits to operate had been obtained. Completion of all major construction projects in Alaska and northwestern Canada, however, had released enough labor by 1945 to make operations possible in all "diggings" which had received WPB permits.

From a long-range point of view, the war may prove to have rather helped than hindered a rational development of the mineral industry in Alaska. The roads and air fields which have been built in the past few years for military purposes will have a beneficial effect in opening up parts of the Territory hitherto inaccessible. The intensive search for strategic minerals which has been spurred by national wartime requirements has led to some discoveries which may prove significant in the future. Diversification of the Alaska mining industry—removal of the

over-emphasis on gold—cannot help having a salutary effect on the whole economy of the Territory.

In the “normal” years before the war, about one-sixth of the total working population of Alaska was engaged in the mining industry, and many more were directly or indirectly dependent upon it for livelihood. Numerous Alaska communities would not exist at all were it not for mines located in their environs, and indeed some Alaska towns have virtually ceased to exist during the war due to the interruption of mining. Mining in Alaska is highly seasonal. During 1939 and 1940, for instance, the average of 4,084 employed in Alaska placer mines worked an average of only 171 days, or less than six months a year, while the 2,007 in lode mines and mills worked only 272 days. Average annual employment for 6,253 men in all types of mines was only 226 days, or about seven and one-half months. The Alaska climate limits the working season in the mines, especially in the placer operations, which furnish most of the employment and produce the most gold, and which happen to be located in the areas of more severe winters. Some lode operations, notably those of the Alaska Juneau Gold Mining Company at Juneau, continue the year round. But winter conditions, as they affect transportation, and human and mechanical efficiency, preclude year-round operation in the great majority of Alaska mines.

“Placer” and “lode” are terms which any prospective Alaskan will want to know about, whether he is interested in mining or not. Mining is bound to be of importance to you when you live in Alaska, a fact well illustrated by the circumstance that an equal division of the 1940 output of minerals among all the white people in Alaska would have given each man, woman, and child a \$725 share. Lodes are masses of ore which occur in rock, often far underground. Placers are deposits of sand and gravel which have been worn from the hard rocks in their vicinity and in which the loose grains of gold or other valuable minerals have been concentrated by geologic processes. Two entirely different types of mining are necessary to get at the gold in the two types

of deposits. Lode mines tend to be large, because of the complicated and expensive equipment required to tunnel to the mineral-bearing ores, wrest them from the rock, bring them to the surface, and extract the gold. Placer deposits can be worked by individuals or small groups. Gold can be panned or sluiced from the placers by comparatively simple methods after the "pay dirt" has been located. However, the small placer operator has given way largely to special dredges, which can handle large quantities of gravel economically, extracting values from earth far too poor to reward the hand operator for his toil. The dredges, of which there are many around Fairbanks and Nome, dig their own lakes on which to float, excavating ahead and depositing gravel behind after the gold has been removed. Powerful hydraulic streams are used to clear from the gold-bearing gravels the heavy overburden which ordinarily covers them.

Each of the two main types of mining is typified in Alaska by a large company. The big lode operation is that of the Alaska Juneau Gold Mining Company, which has a large mine and mill at Juneau. The main office of the company is at San Francisco. Alaska Juneau operations were not closed by the government order in 1942, the company being granted an exception chiefly on its plea that arrangements were being made to process in its mill chromite from Kenai Peninsula. Actually no chrome ore ever arrived for processing, but the mine enjoyed a year and a half of operation until early in 1944, when it closed because it did not wish to comply with an order giving its workers a wage increase of fourteen cents an hour. The mine and mill are being maintained by a small crew, and there is little doubt that operations will be resumed when conditions again become favorable after the war. The Alaska Juneau handles very large quantities of low-grade ore. In 1940, for instance, it trammed 4,739,790 tons of ore to the mill. The ore in 1942 yielded an average of a little over ninety-nine cents' worth of metals per ton. Cost of operation was a little more than eighty-one cents a ton, leaving a net operating profit of eighteen cents a ton. In 1943 the company had

9,844 stockholders. The normal crew of about a thousand had declined to 478 at the end of 1942, and to 328 at the end of 1943. When it became cheaper to close than to comply with the wage-increase order and run, operations were suspended. Some idea of the extent of underground operations at this mine may be gained from the fact that their vertical range covers about three thousand feet, while they extend about two miles in length.

The outstanding placer operator is the United States Smelting, Refining and Mining Company, still known in Alaska as the "F.E.," from the initials of the predecessor company, Fairbanks Exploration. There are two centers of operation by this company in Alaska: on Seward Peninsula it owns claims aggregating 10,980 acres, leases an additional 2,784 acres of claims, and operates four dredges; around Fairbanks it owns 29,453 acres of claims, leases 4,697 acres, and operates eight dredges. The operations of this company, though interrupted by the war, are laid out for many years to come, with a regular process of stripping, thawing, and dredging all carefully integrated. At the end of 1942 the company had some 17,000 stockholders. Fifteen Bostonians each owned a hundred or more shares of common stock.

Aside from gold, the only metal which has bulked very large in importance to the Alaska economy in the past is copper. "In the past" is used advisedly, for operations by the only large copper producer ceased in 1938, when the last great ore bodies were worked out. Thus closed a great epoch of Alaska copper mining, which produced \$227 millions' worth of the metal, principally from the unique and phenomenally rich deposits near Kennecott. A small amount of copper in more recent years has been recovered as a by-product of operations for other metals. Deposits of copper are known to exist in many places in Alaska. It is doubtful whether any of these could be worked, however, under present conditions, although a material advance in the price of copper might bring several of them into the range of economic operation.

Silver in Alaska is produced as a relatively minor constituent

of ores whose principal value lies in some other metal, usually gold or, in the past, copper. There is a good possibility, as indicated by geologic conditions, that valuable silver-lead deposits might be developed in the Hyder district of Southeast Alaska, where transportation and other costs are relatively low. Such an operation might match the famous Premier silver mine, located in British Columbia just across Portland Canal, which forms the boundary between Alaska and Canada. Similarly, lead has been produced in the past as a by-product of gold. The outlook for any large increase in the output of this metal appears to depend on the stimulation of the mining of other metals, whose ores contain lead.

Platinum began to be produced in important quantities in Alaska in 1935, since which time the output of this precious and useful metal, chiefly by one operator, has mounted steadily. Platinum production has been encouraged during the war. The Goodnews Bay Mining Company employs a dredge, drag line, drills, and hydraulic equipment in exploiting placer deposits at the settlement of Platinum on Goodnews Bay. Platinum has also been recovered on Seward Peninsula, in the Copper River country and on Kasaan Peninsula in Southeast Alaska, and is known to exist in widely scattered localities throughout the Territory.

One of the important effects of the war on the future of the mining industry in Alaska has been the program of strategic mineral investigations conducted by the United States Geological Survey and Bureau of Mines. This has included examinations of likely prospects for copper, chrome, zinc, tin, mercury, tungsten, nickel, iron, molybdenite, antimony, barium, and other minerals. Direct and immediate results of these activities have included new, resumed, or increased production of chrome on Kenai Peninsula, antimony in the Kantishna district, scheelite at Hyder and near Fairbanks, coal at Moose Creek in the Matanuska field, and mercury in the Sleetmute area on the Kuskokwim.

The chromite deposits of the southwestern tip of Kenai Pen-

insula are of importance in that they comprise the only United States deposits in which the chrome-iron ratio is sufficiently large to make it possible for the material to be placed directly in steel furnaces to produce stainless steel and other alloys. Other United States chromite ores of which large tonnages are available must undergo expensive "baking" treatments before they can go into steel-manufacturing processes. Chromite of the ferro-chrome type found on the Kenai is normally imported from the Philippines and Turkey. The desirability of developing a reliable supply closer to home has been underlined by war events which for a time cut off both the Philippine and Turkish sources of this important material. The Alaska ore is amenable to treatment by low-cost methods. Chromite has been found in other parts of Alaska, notably on Baranof Island in Southeast Alaska.

Antimony, tin, tungsten, and nickel are other strategic minerals which occur in Alaska and of which no reliable domestic supply in sufficient quantity has ever been developed by the nation. An individual or company furthering the search for and mining of such minerals in Alaska will be performing a patriotic service as well as one for which the economic rewards are likely to be substantial.

Alaska has never been adequately prospected as far as the base metals and non-metallics are concerned. The recent establishment of important electro-metallurgical and electro-chemical industries in the Pacific Northwest suggests the possibility of a close integration of Alaska mineral resources with the mineral and power resources of Oregon and Washington. The utilization of Alaska iron ore, nickel, chromite, limestone, and coal in new processes in this region has become a definite possibility. This places a new value on the extensive iron ore deposits of Kasaan Peninsula, near Ketchikan, and within low-cost water transportation distance from the incomparable cheap power resources of the Pacific Northwest. More than a dozen ore bodies with sixty per cent iron ore have been located on Kasaan by Geological Survey field parties. High-grade limestone has al-

ready been quarried at Dall Island, in the Ketchikan district, and shipped by barge to Seattle for use in cement manufacture.

In the past the occurrence throughout Alaska of such materials as building stone, gravel, road ballast, limestone, and clays has been almost totally neglected, for the reason that these were too low in value as compared with weight to stand shipment to markets outside Alaska. These materials, which could be supplied in almost limitless quantities, will be required as development of the whole Territory progresses. A group of experts who studied Alaska's mineral resources in 1937 predicted that non-metallics in this class might ultimately become even more valuable than all other Alaska minerals.

Marble has been quarried at intervals near Token and Calder in Southeast Alaska and shipped to finishing plants at Seattle and San Francisco. Stone from these quarries has been used in most of the larger and better buildings of the Pacific Coast, especially for interior trim and decoration. Although quiescent at the present time, this activity is certain to resume in the future. Sulphur deposits are known to exist in the craters of some of the volcanoes of the Aleutian Islands and Alaska Peninsula. The possibility of furnishing sulphur from this source to the pulp and paper mills of the Pacific Northwest (and eventually Alaska, itself) merits the careful investigation of enterprisers seeking opportunities in the North. One of the largest undeveloped gypsum deposits in the nation exists on Chichagof Island in Southeast Alaska. Its owner, S. A. Perkins of Tacoma, is associated with Henry Kaiser, who in 1944 purchased the \$20,000,000 Standard Gypsum Company plant, leading to speculation whether the raw material might be furnished from Alaska to be used in the manufacture of fabricated articles of various kinds. Asbestos is another material whose utilization in Alaska recently has loomed as a possibility. Asbestos deposits have been discovered within the past year in the Kobuk district, in connection with the uncovering of a body of tremolite of extremely high grade. In the summer of 1944, asbestos properties in the

Juneau vicinity were investigated by California mining interests, and samples were taken for mill tests.

Many fortunes remain to be made in prospecting and mining in Alaska. Less than half the Territory has been surveyed for minerals, in even an exploratory fashion, by technical agencies. Technological advances in mineral location and in mining and reduction methods will continue to widen the field of feasible operations, bringing into production in the future many Alaska mines now considered uneconomic, as well as countless prospects whose very existence is at present unsuspected. The key man in the creation of wealth from minerals will remain the prospector. His life has in it much that is attractive to many individuals—an outdoor existence, the opportunity to be one's own boss, a chance to explore unknown territory, and always the possibility of discovering a really valuable mine. Such a career obviously should be undertaken only by the physically fit and those who possess technical skill in the chosen field. For such, Alaska still holds opportunities which will well repay the diligent.

To encourage prospecting, it has been suggested that Alaska might well consider putting into effect a system similar to that provided by the Prospectors' Grubstake Act of British Columbia. There, persons with sufficient experience are furnished a \$300 grubstake to enable them to carry on their search for minerals. This assistance is considered a bonus and is not offered as compensation, and the government retains no interest in the finds of the prospectors it assists. British Columbia considers it obtains value received by virtue of the mining activity which results from the discoveries of the subsidized prospectors. So important is this program considered, that during 1944 the Province advertised that if enough inexperienced men applied they would be given a six-weeks' training course in order that they might qualify to obtain a grubstake and get out into the hills on their own. Qualifications include British citizenship and either residence in the Province for a year or an honorable discharge from the armed services. Demonstrating the eternal springing of hope

in the prospector's breast, one additional requirement is that the applicant must be not more than seventy years of age.

An indication that mineral prospecting is not being entirely neglected in Alaska is the fact that in the nine-month period ending in March, 1944, there were twenty-five mining claims totaling 2,800 acres patented in Alaska, more than in any State. From July, 1941, to March, 1944, Alaska reported the patenting of fifty-six claims embracing 5,490 acres.

Among the aids to prospectors maintained in Alaska are four Territorial public assay offices at Anchorage, College, Ketchikan, and Nome, where 3,184 mineral determinations were made in 1943. Depots are maintained at Anchorage, College, and Jakalof Bay for the purchase of mercury, tungsten and chrome on behalf of the Metals Reserve Company. Loans at low rates of interest have been made available to some mining ventures in Alaska by the Reconstruction Finance Corporation. Mining operators in the Territory at present are looking hopefully toward an opportunity which has been announced by the RFC to permit them to purchase certain surplus army equipment and machinery which would be adaptable to use in mining.

This leaves to the end of the chapter a discussion of the development opportunities in two rather specialized mining fields, coal and petroleum. At one time Alaska was thought to be a land of great immediate coal possibilities. Fortunes were staked on the development of coal fields in the Territory, and one of the greatest in the series of national scandals in connection with the utilization of the nation's resources—the Teapot Dome of its day—had its basis in the coal lands of Alaska. Alaska does have very considerable coal resources. No one yet has made a whole lot of money out of them, although coal is one of the main stocks in trade of Alaska's only indigenous millionaire, "Captain" Austin B. Lathrop of Fairbanks.

Between 1880 and 1940, some 2,600,000 tons of coal were produced in Alaska. This exceeded both the amount brought in from the States (approximately 1,500,000 tons), and the total

imported from British Columbia (about 1,800,000 tons). But Alaska has failed in the dreams of the promoters of a half century ago to become a great exporter of coal to the world. The Territory has been able to provide something over half of its own requirements, and that is all. Coal is still being shipped into Alaska in 1945.

Much coal is known to exist in Alaska—more than the original supply of the great coal State of Pennsylvania. But Alaska is larger, the coal is more widely scattered, and it is chiefly of the less valuable sub-bituminous and lignitic types. Only about one-fifth of the known tonnage is anthracite and high-grade bituminous, while about half is lignite and the remainder falls into the bituminous and sub-bituminous classes. In general, it may be said that Alaska coal has great economic value for local purposes, where it has an advantage over outside coals which must be shipped in from great distances, but is not of sufficiently high quality to justify export to compete with other coals in world markets. It is precisely because Alaska coal is valuable chiefly in local markets that the Alaska coal outlook is favorable at the present time. For, if Alaska population is to expand and if Alaska development is to be greatly accelerated, as is thought inevitable, more and more coal will be required in Alaska. And most of this will be Alaska coal.

As early as 1909 more than twelve thousand square miles of coal fields were known to exist in Alaska. These were distributed fairly evenly, both in extent and in tonnage, between the Pacific Coast, the Interior and the Arctic Slope. The principal known coal areas are the Nenana, the Matanuska, the Bering River, and the Cape Lisburne, with other occurrences widely scattered throughout the Territory. The anthracite of the Bering River and Matanuska fields is but little below that of Pennsylvania in composition; the coals classed as semi-anthracite are of about the same composition as the Loyalsock or Bernice Basin coals of Pennsylvania; the higher grade bituminous or semi-bituminous coals of the same two fields are comparable in composition and

heating power to the Georges Creek, New River, and Pocahontas coals of the East; the lower grade Alaska bituminous coals compare favorably with the coals of Japan, Vancouver Island, Washington, and Australia, with which some day they may be in competition.

Alaska coal resources would have been of far greater significance from a development standpoint were it not for the manner in which technical advances and large petroleum discoveries, particularly in California, "demoted" coal in the hierarchy of energy fuels at just the period when Alaska coal might have come in for fairly large-scale utilization. Coal was no longer king. It was not required to the same extent as formerly in industry, in transportation, or for heating purposes. Then too, Alaska coal development has always been retarded by the conditions which exist with regard to laws under which coal lands could be taken up. Probably a substantial development would have occurred had not the Alaska coal scandals to which reference has been made led to a national policy of extreme caution in the allocation of coal lands from the public domain for private exploitation.

Practically all of the Alaska coal mined in recent years has come from two large mines, one in each of the two principal fields, the Matanuska and the Nenana or Healy River. Just before the war, production had risen to about 175,000 tons a year, an all-time high. It is believed that even larger amounts have been mined since that time. The average price of the coal mined in Alaska in 1940 is estimated by the United States Geological Survey to have been about \$4 a ton. The Healy River coal is sold mostly in the Fairbanks market, where the principal customer is the United States Smelting, Refining and Mining Company, which uses it in generating power to operate its gold dredges and other facilities. The higher-grade coal of the Matanuska field is used in the locomotives of the Alaska Railroad and for domestic and power purposes throughout westward Alaska. Recently the army has been an important customer and has taken

over seven coal mines in the Anchorage area. Within the past year some 2,000 acres of coal land in the Nenana field were withdrawn from entry.

The past year has seen an interesting development in Alaska coal utilization. The first Arctic coal mine has been opened on the Meade River about seventy miles south of Point Barrow to supply coal for the Barrow settlement. Mining is being conducted by the Alaska Native Service under the supervision of the United States Bureau of Mines. The coal, which is of excellent burning quality, is mined by open-pit methods after the overburden has been sluiced off. Then it is hauled to Barrow in winter by tractor and sled. It has been found that coal can be delivered in this manner at a fraction of the cost at which it was formerly brought to the far northern outpost by ship.

The outlook for further coal development in Alaska is good. Extensive fields await mining as soon as the local market justifies their exploitation. With respect to coal which might be exported in competition with other fuels in the Pacific Basin, Alaska has in the Bering River and Matanuska fields a source of high-grade steaming and coking coals and anthracite. Extensive development work requiring large outlays of capital will be necessary before Alaska coal from these fields can enter wide markets successfully.

Alaska's petroleum resources, about which less is known than of almost any other mineral, have come into the spotlight of public attention recently, largely as the result of petroleum developments in adjoining areas of northwestern Canada. The Canol project, which has been given so much publicity, was designed to tap an oil field at Norman Wells on the Mackenzie River in the Northwest Territories and transport the fuel to areas of Yukon Territory and Alaska where it was needed by the United States Army. The Canol wells, crude oil line, and refinery lie wholly within Canada. Only a portion of the gasoline service line enters Alaska. This line, as well as the refinery at Whitehorse, Y.T., was operated under contract by the Standard

Oil Company (Alaska), a wholly owned subsidiary of the Standard Oil Company of California. The products pipe line delivers gasoline as far as Fairbanks, exclusively for the use of the army, which developed the Canol project. The refinery and all the rest of the \$134,000,000 project, with the exception of the products pipe line, were closed down in 1945. The answer to the question as to why the Norman Wells field was developed in preference to one in Alaska is that at the time the project was undertaken, no Alaska field had been explored in more than a very general reconnaissance fashion. This remains the situation today, although ambitious steps are being taken to explore one of the Alaska oil fields. Less is known today about petroleum anywhere in Alaska than was known about the Norman Wells field fifty years ago. Norman Wells proved to be a good productive field; it may become a world field. No Alaska field is known to contain petroleum in commercial quantities.

Steps are being taken to rectify this omission in information on a vital resource. Explorations have been under way in the Point Barrow field since the summer of 1944 by a large Seabee party, which was landed by two Liberty ships on the Arctic Coast at Cape Simpson, fifty miles east of Point Barrow. Four drill rigs were put ashore and manned by navy construction battalion crews made up mostly of oilmen from Texas, Oklahoma, and California. Oil seepages had been observed in this area since 1886. Two California oil parties investigated the field in 1922, but without definite results. The area where the explorations are being made lies within a Federal oil reservation of 70,000 square miles. At least part of this withdrawal probably will be lifted at the end of the war, throwing potential oil areas open to private exploitation. In addition to examining the occurrence of petroleum in the field, the Seabee expedition is studying the feasibility of a 500-mile pipe line from the Barrow field to Fairbanks.

The far north field at Barrow is not the only known oil field in Alaska. Between 1904 and 1933, a small company was actually

in commercial production at Katalla, on the Pacific Coast east of the mouth of the Copper River. The wells of this company were relatively shallow, few being more than one thousand and none more than two thousand feet deep. The firm went out of production following a fire which destroyed its buildings. Three other districts in Alaska have shown indications of petroleum. They are the Yakataga, the Iniskin Bay and the Cold Bay districts. The petroleum of the Pacific Coast fields is a high-grade refining oil with a paraffin base. That found in the Arctic field appears to have an asphaltic base. Drilling has been done in Alaska in about forty-five wells, two-thirds of them in the Katalla field. Deep drilling apparently is required in many of the prospective Alaska fields. Tests in one of the Alaska Peninsula fields penetrated nearly 8,800 feet of sediments that were apparently but part of the sequence laid down during a single geologic period, and the bottom of the hole was still above the horizon in which accumulations of oil are likely to occur.

Those who have followed the experience of petroleum investigations in Alaska are willing to predict with considerable confidence that there are several areas where skilled exploration backed by adequate funds is likely to disclose commercial deposits of petroleum and possibly an important field from the world standpoint. Some measure of the returns which might reward successful exploration is furnished by the size of the petroleum market which exists within Alaska alone. In recent years more than \$4,000,000 worth of petroleum products have been imported annually into the Territory.

OPPORTUNITIES OUT-OF-DOORS:

TRAPPING, HUNTING, GUIDING, FUR FARMING

MAYBE your secret ambition is to make your living by hunting and trapping, to live the carefree life of the outdoorsman, tracking wild animals to their lair, felling some distant beast with a single well placed shot, subsisting on venison and bear steaks, clothing yourself in the skins of elusive fur-bearers that have fallen prey to your skill, and lying down at night in a bearskin robe under the stars and the northern lights. If so, you are reluctantly but positively warned that you were born a hundred years too late, and that there is no place in Alaska in this day and age for such rugged characters as yourself.

Wildlife constitutes one of the major resources of the Territory. Big game animals and fur-bearers exist in fair abundance, probably in greater abundance than anywhere else in North America. But every part of Alaska already is being thoroughly trapped. Every species of fur animal is being cropped just as closely as is consistent with maintaining a safe breeding supply. Strict regulations have had to be imposed to prevent the rapid depletion of game and fur animals.

One reason there is no opportunity in Alaska for a large number of additional hunters and trappers is that natives outnumber whites in this field of activity by more than ten to one, and most of these natives live in regions where there is no other economic source of livelihood. The 1940 census showed that forty-five per cent of all gainfully employed natives are dependent upon hunting and trapping as a principal source of income. The entrance of additional whites into this occupation would leave many natives destitute, and would increase unduly the pressure on diminishing wildlife resources. And large portions of Alaska could not

sustain human habitation at all if the fur and game supply should become depleted.

Alaska is the natural habitat of some twenty-odd varieties of land fur animals. The number and value of furs taken annually ranks trapping as the third most important industry of the Territory. Production averages between \$2,000,000 and \$3,000,000 a year. A typical year would find the Territory producing about \$285,000 worth of beaver, \$720,000 worth of black, silver, blue, red, and white fox pelts, \$575,000 in fur seal, \$170,000 in marten, \$465,000 in mink, \$235,000 in muskrat, \$40,000 in otter, \$6,000 in hair seal, and \$175,000 in all other pelts, including lynx, ermine, wolf, coyote, wolverine, hare, marmot, and squirrel. Values vary considerably, of course, with prices in the fur market. Furs exported from the Territory in 1944 were valued at \$2,275,000.

Something might possibly be done to increase the supply of fur-bearers in Alaska. It has been noticed that deadly epizootics appear among the rabbits, grouse, and ptarmigan at fairly regular intervals of about nine years, reducing them nearly to the vanishing point. Since these animals and birds constitute the principal food supply for such valuable fur-bearers as foxes, lynx, marten, and ermine, there is a direct relationship between their abundance and the size of the fur crop. If the cause of these recurrent wildlife disappearances could be determined, steps might be taken to check the phenomenon, and the supply of fur-bearers could thus be stabilized. Certain predators, particularly the wolf and coyote, also have a serious effect upon the abundance of fur-bearers as well as of big game animals. Wolves have always been present in Alaska, but coyotes are of fairly recent advent, having followed the white man into the country. For about thirty-five years, the coyote has gradually been extending its range in Alaska until it has become firmly established in many sections. The bounty system which has been employed in an effort to check the predators is pretty generally conceded to have been unsuccessful. At any rate, there are probably more wolves and coyotes

in Alaska now than at any time in the past, despite the Territory's having paid large sums for their control. The current bounty on wolves is \$20 and on coyotes \$17.50. A law passed in 1941 provides a special affidavit arrangement for substantiating claims for bounties on predators killed from airplanes and hence not brought in for checking.

Besides furnishing considerable recreation and some food for Alaskans, big-game hunting attracts a considerable number of sportsmen to the Territory. Moose, bear, and sheep hunting in Alaska is the best in the world. The variety, abundance, and quality of big-game hunting furnishes revenue and employment to many Alaskans who are engaged as guides or in the resort, transportation, and service industries. Since a visit to the Territory for the purpose of hunting or fishing is an expensive expedition, the returns to Alaska from encouraging this type of recreation are very substantial. In order to continue to draw wealthy sportsmen, who spend freely for the privilege of enjoying the best hunting and fishing obtainable anywhere, Alaska must be vigilant to maintain wildlife at a high level of abundance. A general hunting license alone costs the non-resident \$50, while aliens are charged \$100. The cost of a good hunt will run to many times these amounts. The Alaska game law further requires each non-resident or alien hunter to be accompanied by a registered guide while taking big game. Such guides must be experts in arranging the hunt, heading the party in the field, locating the game, lending advice in the selection of suitable trophies, skinning out, preparing and curing the trophies, and attending afterward to the shipment of the skins, capes, and antlers. Registered guide service in Alaska is a carefully studied, permanently established, closely supervised profession in which high-class outdoorsmen are engaged. Naturally, a number of years of outdoor experience in Alaska or similar regions is a necessary prerequisite to anyone aspiring to such an occupation.

While it is true that Alaska's supply of wild fur-bearers will stand no more intensive exploitation, on the other hand there

is an excellent opportunity for persons with some capital to engage in the business of fur farming. Conditions are ideal in Alaska for ranch production of furs on a quantity and high-quality basis. The estimated average annual production of pelts on Alaska fur farms is about \$500,000, or only about one-fifth of the total fur output, wild and ranch-raised. The 1940 census listed 275 fur farms in the Territory and indicated that the average farm possessed about \$3,000 worth of breeding stock and had \$2,700 invested in buildings, pens, and equipment. Those who have made a study of fur farming possibilities in Alaska estimate there should be no difficulty in increasing this activity fifty-fold into an industry producing pelts worth \$25,000,000 a year. Special opportunities present themselves in Alaska for developing the silver, blue, and white color phases in foxes. Mink thrive on Alaska fur farms, and produce pelts of high quality and price. Marten and lynx are other furs of consistently high price which undoubtedly could be raised successfully on Alaska fur farms.

To devise improved handling and feeding methods, an experimental fur farm is maintained near Petersburg by cooperation of the Alaska Game Commission and the University of Alaska. Recently experiments there resulted in production of a highly desirable light color phase fox pelt by cross breeding blue and white animals. Diet studies with mink and breeding experiments with marten are also being conducted, all with the aim of fostering production on private fur farms in future years.

The hundreds of small islands along the Alaska coast possess natural barriers in the form of water boundaries, within which fur-bearers can be raised cheaply and safely under conditions closely resembling their native environment. Some ninety islands in Southeast Alaska have been leased for the raising of blue foxes. Mainland areas are well adapted to the pen raising of foxes and mink. Some difficulties in the form of parasite infestations have developed on the islands through lack of proper

control over feeding and breeding, and at the present time pen raising is thought to be the better practice.

Mink farming, although still in its earliest stages of development in Alaska, is believed to possess very great possibilities. It has been estimated that present production of the high-priced "Yukon" mink in Alaska could be expanded at least a hundred-fold without affecting current world prices. Mink farming requires but a few acres of ground, little equipment and little experience. The animals possess a natural resistance which makes them immune to many of the diseases besetting other cultivated fur-bearers. Fish is a chief item of diet, and is plentiful in most of the coastal sections of Alaska. One young mink rancher who established himself on a five-acre homestead near a cannery in order to utilize fish waste got his feed costs down to one cent per mink per day. Each year his ranch produces some five hundred pelts. Last winter ranch mink were bringing from \$15 to \$37.50 in Seattle fur auctions, while marten brought from \$26 to \$80 and lynx from \$15 to \$70. The 61,038 mink pelts raised on fur farms and caught on traplines in Alaska in 1944 were valued at \$671,418.

Mink stock (and it pays to invest in good stock to begin with, because it costs just as much to raise a poor mink as a good one) costs from forty dollars to sixty dollars apiece. Twenty females and ten males will produce on the average about eighty additional mink annually. Great expansion is expected in the industry, owing to the fact that the supply of wild mink has been appreciably depleted in recent years, and cultivated mink is far superior and brings a higher price. The demand for mink is constantly increasing.

Fur farming is a year-round occupation which can be highly profitable if properly conducted. It has potentialities for supporting an additional population of more than 25,000 in Alaska.

OPPORTUNITIES IN CONSTRUCTION

CONSTRUCTION has been the major industry in Alaska during the war years, more important than fishing or mining, or the two combined. The nation is familiar with some of the large projects of the North, particularly the Alaska Highway and the Canol pipe line. (Incidentally, only about twenty per cent of the total cost of these two undertakings was expended in Alaska, the greatest part of both being in Canada.) Many other major construction jobs, small only by comparison with such behemoths as these two, have been carried to completion within the past few years. This activity has introduced to the North thousands of construction workers, from virtually all trades. Many are considering remaining in the Territory to make it their home, and others who have returned to the States or have followed the fortunes of war to other outposts are thinking of returning to Alaska. The outlook for most of these to find gainful employment in their own line is fairly good. Construction is a busy field in a country which is expanding and growing, and construction should be a substantial activity in Alaska for many years to come.

The peak has passed long since on wartime construction in Alaska. As the big projects were completed, workers found ready employment on other jobs in Alaska or returned to the States. Suffering from the same manpower shortage affecting other areas, defense works in the Territory lacked several thousand workers in the summer of 1944, leading the United States Civil Service to call for forty personnel officers to canvass the nation to recruit labor for Alaska. As late as September, men for Alaska still were being sought by the United States Employment Service in virtually all trades. By November, for the first time, a slight surplus of labor was noted in some localities, as at Juneau, although openings remained in certain trades. The demand for

carpenters, for instance, continued brisk. In November, men were still being snapped up at Fairbanks as quickly as they were released from completed projects, and during the month sixty workers for Canol road maintenance were hired in the Golden Heart city. The corner quite definitely was turned by December, however, and warnings began to issue from placement officials that there was at least a temporary oversupply of construction workers in the Territory. At Anchorage, for instance, about fifty men who arrived from one northbound steamer to look for work had the unique experience for this area and these times of not finding readily available openings, and Anchorage was faced with a temporarily serious housing problem in taking care of them until they could be hired. Toward the end of the year, with seasonal activities throughout Alaska at a standstill, the surplus of job-seekers became serious. This was the result of a northward movement of from fifty to three hundred a week after August, when travel restrictions were removed. Construction activity always is at low ebb in Alaska in midwinter; but quite aside from that the signs are clear that work in this line will be less easy to find in the immediate future than it has been at any time since 1940.

Although the major government projects are largely finished, a good volume of private construction has been deferred by the war, and many of these jobs will get under way, now that workmen and materials are again available. Among the building projects on which work already has begun or which have been announced for early construction are a large theater and one hundred residences at Anchorage; a \$60,000 laundry building and sixty houses at Fairbanks; a \$300,000 office building, a store building, an addition to the cold storage plant, and thirty dwellings at Juneau; a fish plant addition and fifty residences at Ketchikan; ten houses at Wrangell; a \$500,000 fish cannery and warehouse at Cordova, and business and residential work in most of the towns of the Territory. Anchorage alone plans more

than \$2,000,000 in private construction in the immediate post-war years.

Municipalities stand ready to institute many public-works construction jobs just as soon as conditions are favorable. Petersburg is planning a new power dam, which is to cost \$75,000. Cordova is raising a fund for a \$15,000 community hospital. Fairbanks is planning to build a water-supply system costing \$1,800,000. Ketchikan recently voted \$165,000 for development of a power project at Beaver Falls, ultimate cost of which will be around \$500,000. Other public utilities expenditures totaling \$137,000 and a bridge costing \$88,000 are also planned by the same city.

The Federal Government may be counted upon to undertake a number of good-sized building projects in Alaska after the war. One is a large tuberculosis hospital at Ketchikan. Plans also are being considered for a veterans' hospital in or near Seward. Additional space for government offices is needed at a number of centers. The Territory might well adopt a modest building program, including several school buildings, a Territorial building at Juneau, and a building for a branch of the University of Alaska at Ketchikan.

Highway construction and maintenance are always an important seasonal activity in the Territory. Three separate governmental agencies build roads in Alaska. The Public Roads Administration (formerly Bureau of Public Roads) builds and maintains highways on national forest land and adjacent areas, and is active chiefly in Southeast and South-Central Alaska. The Alaska Road Commission is responsible for roads on the public domain, and operates principally in the vast interior region. Maintenance of the portions of the Alaska Highway which lie within the Territory has been turned over to the Alaska Road Commission by the Alaskan Department of the army. The third road agency is the office of the Territorial Highway Engineer, which administers the road construction and maintenance

programs of the Territory, often in cooperation with one or the other of the two Federal agencies. All three highway agencies have their headquarters in Juneau. The greatly increased road mileage which has resulted from wartime highway construction in Alaska should lead in the post-war period both to larger programs for maintenance and to the building of various connections which will increase the peacetime usefulness of the Alaska Highway system.

Plans to construct new buildings costing about \$300,000 at a new division point at Healy have been announced by the Alaska Railroad. A rivers and harbors improvement program totaling \$3,935,000 has been drawn up for post-war construction in Alaska by the Corps of Engineers. Included are projects at Metlakatla, Craig, Meyers Chuck, Wrangell, Wrangell Narrows, Sitka, Skagway, Petersburg, Port Alexander, Gastineau Channel, Elfin Cove, and Seldovia.

Construction in Alaska presents many unique problems in dealing with permanently frozen ground, with unusual supply and transportation problems and with seasonal working conditions. Contracts in the Territory, for this reason, should not be undertaken by firms which do not have some experience in coping with conditions in northern and remote areas. This situation leaves open a wide field for Alaska contractors who specialize in construction of roads, bridges, air fields, housing and other buildings under the peculiar conditions applying in the Territory.

OPPORTUNITIES IN TRANSPORTATION AND THE TOURIST TRADE

You will not live in Alaska long before you begin to have an acute appreciation of the great influence of transportation—or the lack of it—upon the daily life of the inhabitants of the Territory. In a region of vast distances, which is moreover somewhat removed from the national center to which it is bound by economic and cultural ties, this is inevitable. Steamship lines, highways, airways between the States and Alaska all are lifelines to the people who live in the Territory. No less important are the means of transportation which link together the various sections of Alaska. A map showing population distribution illustrates strikingly that what few people now live in Alaska cling closely to developed transportation routes; on a dot map, the symbols of habitation look like beads strung along the railways, highways and navigable rivers, and coastline.

Transportation is an important business in Alaska. It will become even more important as the population of the Territory increases. Existing means of transportation have been discussed elsewhere: three or four steamship lines operating between Seattle and Alaska; two railways from coastal ports to the interior; a few thousand miles of unpaved highway; half a dozen steamboats on the main rivers, and airplanes flying everywhere. Abundant opportunities exist to improve services in each of these fields and in related lines of activity.

The capital required to enter into the water-transportation business places it beyond the consideration of most individuals, but the very evident shortcomings of the existing services to Alaska—outmoded ships, undependable schedules, poor accommodations and extremely high rates—suggest this as a field for careful study by steamship companies now operating in other

trades or by groups prepared to make the necessary initial investment. That the operation of steamships between Alaska and the States is a profitable enterprise is indicated by the experience of the principal carrier in the trade which, starting with a \$3,000,000 investment in 1911, had by 1939 paid more than \$15,000,000 in dividends and built up a fleet and other property the fair value of which, for rate-making purposes, the company contended was \$14,000,000. An adequately financed and smartly managed company, operating efficient modern vessels, should be able, while earning a good return, to improve service and reduce rates so as to give Alaskans a better transportation bargain. Nothing would contribute more to the rapid development of the Territory.

One specific water-transportation opportunity which has received some study is an automobile ferry service connecting the main Southeast Alaska cities of Ketchikan, Wrangell, Petersburg, Juneau, and Skagway with overland highway connections at Prince Rupert and Haines. Such a ferry would operate along the protected Inside Passage and would serve important communities which can never be reached by highway. It would provide the missing link in a through coastal route from the Pacific Northwest to Interior Alaska, and because of the spectacular scenic attractions along the route should generate heavy travel by providing a round-trip alternate to the Alaska Highway. Preliminary estimates which have been made of probable traffic, of rates which would successfully meet airline and other competition, and of ferry operating expenses, indicate that such a service has a good chance of financial success under private ownership and operation.

The Alaska Railroad, government owned and operated, has struggled ever since the beginning of service against handicaps of poor equipment (most of it transplanted to the North after having been used in the construction of the Panama Canal), a roadbed which was never really completed to a satisfactory standard, and congressional policies necessitating rates higher

than the traffic would bear cheerfully. For a combination of reasons, including these, the railroad has never fulfilled quite the development function envisioned for it. But during the past few war years, traffic has increased so greatly, due principally to military construction projects in Alaska, that the railroad has been able to accumulate funds with which to effect some badly needed modernization. Two new Diesel engines have already been put on the job, and plans have been announced to put modern coaches, dining cars and fast locomotives in service. These will permit a through trip to Fairbanks in one day instead of the present two. Other improvements in equipment ought to be reflected in better service in the future and eventually in lower rates. The railroad offers steady employment to a large number of transportation workers. Recently, due to manpower shortages, the line advertised for four hundred women aged eighteen to fifty to do men's work at section houses along the line. Such recruiting was necessary to fill the ranks of bundle wrappers and checkers, clerks, stenographers, freight truckers, maintenance workers on cars, and the railroad was even considering hiring female brakemen. Both the Alaska Railroad and the shorter British-owned White Pass and Yukon Route from Skagway were still seeking workers in the winter of 1944-45.

Special opportunities to become established in Alaska will be provided at the new Alaska Railroad terminus of Whittier. Although the bulk of traffic for the interior of Alaska already moves through this port, which is destined to become a thriving town, no community has yet developed. This is explained by the fact that the new terminus was put into service in wartime, and it was judged better to withhold sale of lots in the Whittier townsite until after the war, when building materials would be available and a more orderly development would be assured. The town site has been surveyed by the General Land Office, which will offer business and residential lots for sale at some future date. A sawmill has already been established there to provide ties and lumber to the railroad and the rail belt market; so Whittier

can count on some industry in addition to the very important railroad activity. Opportunity will exist there for all the businesses and services required by a small community. The opportunity is especially attractive because those who settle at Whittier will be able to "get in on the ground floor" of development in a brand new town with a definitely assured future.

If Alaska really begins to develop after the war as a region with a substantial population, some more dependable means of overland transportation with the States will have to be provided. Eventually this will be a railroad, unless technological progress in other forms of transportation advances far beyond what can now be foreseen. Only a railroad can move economically over so long a haul the large volume of freight required to support a well developed and populated region. A "railroader's dream" in the way of a route to Alaska from the rail network of the United States and Canada has already been thoroughly surveyed. In response to a wartime directive, army engineers in 1942 located a standard-gage military railroad to connect the Canadian National at Prince George with the Alaska Railroad, making use of the Rocky Mountain Trench. Generally, the 1,416-mile line consists of two long tangents: one from Prince George to the vicinity of Frances Lake, Y.T., the other from there to the station of Kobe on the Alaska Railroad. This line runs exactly parallel to the coastline, but about 250 miles inland. Because of the remarkable natural route provided by the Trench, maximum grade against northbound traffic is only $1\frac{1}{2}$ per cent, and against southbound 2 per cent. The line nowhere diverges more than thirty miles from the line of the two long tangents. The route has an average elevation of about 2,500 feet. The highest point is at Sifton Pass, B.C., 3,200 feet, and the second highest at the Arctic-Bering Divide, 3,100 feet. The route crosses the Yukon River at Five Finger Rapids, where nature has provided rock abutments for a bridge. On the entire length of the line there is only one tunnel; it is 1,200 feet long. The only difficult section to maintain, from the standpoint of permanently

frozen ground, would be a short stretch near the Ladue River.

Although the turning of the Japanese threat at Midway and in the Aleutians made construction as a military project unnecessary, the army's surveys should become available and prove useful for peacetime purposes in the future. A report which has been prepared on the kind of traffic that might be expected in normal times seems to indicate that a railroad on this route could pay for itself. Here is an opportunity for private initiative—an opportunity of the type which was supposed to have disappeared in America several generations ago.

New highways built in Alaska during the war offer freight and passenger trucking possibilities of considerable promise. The main new links, which fit together with sections which existed previously to provide for the first time an Alaska highway system, are: 1, the Alaska Highway, from Dawson Creek, B.C., to Fairbanks; 2, the Haines Cut-off, connecting the Alaska Highway with the port of Haines on the Inside Passage; 3, the Slana-Tok Cut-off, providing a short route to Valdez and Anchorage from lower Alaska Highway points, and 4, the Glenn Highway, giving Anchorage for the first time a road connection with Fairbanks. In addition, two roads which have been constructed far outside of Alaska's borders should have a definite influence on the development of highway traffic in the Territory. One of these is the rough 500-mile road from Whitehorse, Y.T., to Norman Wells, N.W.T., completed in 1944 to service the Canol pipe line, and significant because it opens up a large section of the North which heretofore could not be reached overland. The other is the Skeena Highway, giving the Prince George-Hazelton area of British Columbia access to the sea. This 195-mile road is the last link in a through route from Vancouver to Prince Rupert. Scenic and picturesque, it is certain to become a popular tourist route after the war, attracting many travelers who will go on to Alaska by way of steamer or car ferry on the Inside Passage. The Alaska, Canol, and Skeena highways all have been closed to general travel for the time being.

The Alaska Highway has had so much extravagant publicity that it seems worth while to explain just what it is—and is not. Early in 1942, the Canadian and United States governments reached an agreement for construction of a military highway connecting half a dozen airports which had been built across British Columbia and the Yukon Territory. Built at remarkable speed (and tremendous cost) under wartime conditions, this road appealed strongly to the imagination of the American people, who considered it the fulfillment of dreams and plans they had been hearing about for many years for a highway to Alaska from the United States. Cast in this role, the Alaska Highway is something of a disappointment. The route is not scenic or direct, nor does it open up country as favorable from the development standpoint as that which would be tapped by other routes. The way the road was to take was dictated by the location of the chain of airports. Remember, it was to be an airway service road, and not in any sense a means of overland supply to Alaska. The principal shortcoming of the road as a means of access to Alaska is its lack of any suitable connection with the highway systems of the United States and Canada. The highway takes off not from a highway but from a railroad, the northern terminus of the Northern Alberta Railway, which connects at Edmonton with the Canadian National. This was perfectly satisfactory for the movement of gasoline and other supplies to the airports, but has obvious disadvantages from the standpoint of the trucker or tourist desiring to drive through to Alaska from points in the United States.

There is a low-standard dirt road which connects Dawson Creek by a roundabout route with Edmonton, but it cannot be traveled at certain seasons of the year. Relocation and reconstruction of this road, as well as the provision of a more direct connection with the road system of British Columbia to the west, will be necessary before any very large use will be made of the Alaska Highway in peacetime. About three hundred miles

of new construction are involved in providing these necessary connections. The Alaska Highway itself is a fairly good gravel road. It is much better than most roads in the North. But it falls very far short of the standard to which the American motoring public is accustomed. Moreover, the roads which would have to be traveled in Canada to connect with it are not very good. Whether many tourists would wish to endure some two thousand miles of graveled road in driving to Alaska, with another two thousand miles of identical road on the return trip, is problematical.

As to the utility of the Alaska Highway as a trucking route, the testimony of a Fairbanks trucking operator who took a semi-truck and trailer from Seattle to Fairbanks in nine days in the summer of 1944 is eloquent. He says: "It is entirely out of the question to try to compete with steamship companies in hauling freight from Seattle over this route. . . . The roads of Canada are absolutely terrible. They are narrow and winding. The surfacing, what there is of it, usually is wavy and full of holes, making high-speed travel impossible. . . . The road from Edmonton to Dawson Creek is for the most part unsurfaced and at certain times of the year impassable."

Another driver took a truck over the 1560-mile route from Dawson Creek to Fairbanks at an average of two hundred miles a day, had four flat tires en route, lost fifteen pounds from nervous strain, and had a stiff arm from the constant changing of gears on mountain grades. A 37-passenger bus intended for use in Alaska was driven in the summer of 1944 from Columbus, Ohio, to Fairbanks in 10½ days driving time for 4,743 miles, but considerable time was lost en route. There was a six-day delay, for instance, at Edmonton, where rains made the road impassable. At several points the bus had to be towed out of the mud by tractors. The economics of the situation are such that even with a good road, truckers cannot possibly compete with a combination of steamship and rail transportation over the long haul to

Fairbanks, although some opportunity exists for serving by truck the settlements along the way. This opportunity will expand as the country develops.

The greater part of the Alaska Highway, of course, lies in Canada. A Dawson Creek livestock man was delivering fresh meat in the summer of 1944 to Alaska Highway points by cold-storage van. He found he could deliver profitably as far as Whitehorse. At that time he was planning to expand into the moving of live horses and cattle over the route. The Peace River country doubtless can supply in this manner all the beef, pork, poultry, and dairy products which will be needed along this portion of the road for many years to come.

The future of the Alaska Highway is difficult to predict. According to the very simple agreement under which it was constructed, the highway is to be maintained by the United States until six months after the war, at which time the sections in Canada will become "an integral part of the Canadian highway system." With its main Trans-Canada highway system still far from complete, with vast areas of sparsely settled or unoccupied territory northwest of Edmonton, with heavy investments in the competing railroads, and thus far no precedent for large Federal grants-in-aid for highway-building purposes, it seems doubtful whether Canada will be enthusiastic to maintain the long Alaska Highway at a very high standard, let alone provide the connections which will be necessary to make it of much use as a through route to Alaska. It is estimated that maintenance costs alone on the present highway will amount to at least \$600 a mile annually. Highway expenditures in Canada fall on the Provinces. Alberta already has 92,000 miles of road, of which only three thousand miles are even graveled. British Columbia is similarly burdened with the task of maintaining extensive highway mileage to serve a small population in a vast country. And the Alaska Highway is of comparatively little interest to either Province. So the outlook for improvement and extension of the highway in the early

post-war years is rather dark. Talk of "abandoning" the Alaska Highway altogether was heard early in 1945.

One possible solution to the problem of providing a useful means of overland transportation to Alaska is the construction of a highway on one of the other routes which have been suggested. From the practical political standpoint, this probably would be difficult to achieve. The United States has just provided one highway to Alaska at tremendous cost. Estimates which have been made of its probable use in the early post-war years indicate that gas taxes and other road-user revenues, even a moderate toll, would not yield more than about a third of the costs of maintenance, even if the entire original cost of construction is charged off to the war. So we are already rather deeply involved financially in highway construction and maintenance in the North. The question which is bound to be asked when new roads are promoted is: "Why spend more?" The same objections governing the Canadian attitude toward highway costs apply in the case of a more useful Alaska Highway on a different route.

Better trucking possibilities exist on the Haines and Valdez routes to Interior Alaska, although here too the operator will be hard pressed to meet the competition of a joint water-rail haul by the Alaska Steamship Company and Alaska Railroad. On less-than-carload lots, motor carriers should be able to compete successfully in moving some commodities. The prospect for profitable truck and bus lines between points in Alaska is very much brighter. A bus service has already been established between Anchorage and Fairbanks, over the Glenn and Richardson highways. A 37-passenger bus was making two round trips a week in 1944, but was forced to discontinue service in October because of poor road conditions. In 1945, Anchorage-Whitehorse service was instituted, and the company was operating, over all its routes, a total of twenty-six buses. The Richardson and Steese highways in Alaska have always been closed for a long period

in the winter. The Alaska Highway, on the other hand, has remained open to traffic throughout the year except for temporary interruptions of service due to washouts, particularly heavy snowfalls, etc. Winter driving conditions in the North are a serious problem for the prospective Alaska trucker to contend with. Much difficulty was experienced in keeping trucks moving on the Alaska Highway. Another unfavorable factor is the very high cost of gasoline through most of the North. Whether the Canol gasoline service pipe line can be used in peacetime in such a way as to reduce these costs along the upper stretches of the Alaska Highway remains to be seen. Last summer the price of gasoline in the Whitehorse vicinity was seventy-five cents for an imperial gallon. The trucking rate usually mentioned as a minimum standard in northwestern Canada and Alaska is ten cents a ton-mile. Though this is very much higher than rates in the United States, it is thought to be one which fairly reflects conditions with which the operator must contend in the North.

Because of the great distances involved in getting about in Alaska and because of the difficulties of ground transportation, there has been a spectacular development in the Territory of air travel. The exploits of Alaska's bush pilots have been fairly well advertised, as have recent developments in throwing across the Territory an important air route to Asia and beyond. This part of the world is one of the strategic air crossroads over which diplomats furrow their brows and over which airline operators are getting set to compete for dominance. Great Circle route navigation from the United States to either Europe or Asia takes planes northward. It is no longer a surprise for the residents of Fairbanks to catch a glimpse of such notables as Henry Wallace on his way home from China, or Premier Molotov passing through town en route to the San Francisco security conference. This is a regular main line stop. Alaska furnishes a land bridge over virtually the entire short-line route to Asia. This route has already been fairly well developed during the war for the transportation to our Russian ally of thousands of war planes. Even

pursuit planes of limited range flew it successfully all the way to Russia's western front. In the future, this will be one of the great international world airways. No matter what nations or what companies will fly it, and whatever the details of the arrangements, Alaska will benefit as the locale of ground facilities which probably will be quite elaborate.

Too much international air travel should not be expected, however, in the years immediately following the war. A study shading every estimate on the optimistic side concludes that the number of planes required to handle all foreseeable traffic will be quite small. The estimates allow for a large expansion in commercial intercourse between the United States and Alaska on one hand and between North America and Asia on the other, and for a very deep "penetration" of the total water-borne passenger traffic by air carriers. But even under these conditions, travel between the United States and Asia in the fifth year after the end of the war could be handled by daily service in each direction by 57-passenger planes. If the northern route via Alaska obtained half of this traffic, as seems probable, only one flight by a plane of this size would be required every other day. During the same period, five years after the war, three thirty-passenger planes in each direction could handle the daily traffic between the States and Alaska, except in the months of peak travel, when perhaps twice as many flights would be required.

This is a fairly substantial volume of business, but it is doubtful whether it is large enough to support, without extravagant subsidies, competing United States, Canadian, Russian, and Chinese operations, let alone several competing lines under each flag. Nor is air freight over these long distances likely to contribute importantly to the total traffic. The costs of moving freight by air, even with all the hypothetical economies of planes built for unmixed freight loads, probably will not get much below ten cents a ton-mile, which is many times the expense of shipping by water. In view of this high cost, the saving of trans-

port time is not likely to be a factor of much influence except with a very small volume of express.

Regular air service between Seattle and Alaska points has been furnished since 1940 by Pan American Airways. No other company holds a regular certificate for such service, although special arrangements have been made during the war for a number of other United States lines to fly to Alaska under military contract. In the critical days following the Japanese attack on Dutch Harbor and occupation of the outer Aleutians, ten airlines were flying supplies and men to Alaska. Besides PAA, these were United Air Lines, American Air Lines, Northwest Airlines, Pennsylvania-Central Air Lines, TWA, Chicago and Southern, Western Air Lines, Braniff, and Panagra. At least several of these companies would like to fly to or through Alaska after the war, and many applications have been filed for international routes from the United States to various Asiatic points via Alaska. Meanwhile, Pan American has been released from wartime arrangements under which the company was operating agent for the navy on flights between Seattle and Alaska, and has resumed unrestricted commercial operations.

Recently these operations were stepped up through the acquisition of five 21-passenger Douglas DC₃ planes, converted from military transports. The company has changed its main route from one via Prince George, B.C., to one directly to Juneau, with refueling at Port Hardy, B.C., at the northern tip of Vancouver Island. One-day round-trip service between Seattle and Juneau is advertised. Sixteen flights weekly are provided on the main Seattle-Juneau-Whitehorse-Fairbanks route, three flights Fairbanks-Nome, a weekly flight from Fairbanks to Bethel and several round trips weekly on a Juneau-Fairbanks-Whitehorse run. Pan American Airways is in a very strong competitive position by reason of its "head start" in Alaska operations. United Air Lines, which has flown some 5,000,000 miles in Alaska during the war for the Army Transport Command, is known to be doing some active planning to enter Alaska service after the war

on a Seattle-Ketchikan-Juneau-Yakutat-Anchorage-Fairbanks route. The vice president of this company has predicted post-war air rates from Seattle of \$63.91 to Juneau, \$106.47 to Anchorage, and \$145.60 to Nome.

Local use of air transport in Alaska is extensive. The country is peculiarly suited to the use of the airplane for purposes which in more highly developed areas would be served by rail or road. In 1939, last year of normal operations before the war, Alaska had 116 times as many planes per capita as the States; these flew seventy times as many miles, carried twenty-three times as many passengers, flew eighteen times as many passenger-miles, carried 1,034 times as much freight and express, and forty-eight times as much mail. Supplanting the dog sled, river boat and other slow means of transportation, the airplane has revolutionized travel in the North. In going from one local point to another, the Alaskan is more likely to go by air than any other way. Numerous small operators established irregular services throughout the 1930's to meet the demands of an air-minded Alaska clientele. Although often they consisted only of a single pilot and his plane, such "airlines" developed at virtually every Alaska community. They would fly almost anywhere and at any time. Recently many of these independent operations have been consolidated into more formal and conventional companies. The largest and most aggressive of these expanding operations is Alaska Airlines, which offers Juneau-Anchorage-Fairbanks service as well as flights on many other shorter routes. This company has plans to operate fifty-passenger planes after the war from Chicago to China, via Fairbanks and Nome, and from Seattle to the East Indies, via Anchorage and the Aleutians. Other Alaska operators have their eyes on post-war routes to the States or, in the other direction, to Asia.

Short-distance air-express services are better developed in the Territory than in areas with normal ground transportation facilities. One enterprising operator recently began flying fifteen tons of fresh seafood weekly between Homer and Anchorage,

with another fifteen tons for Fairbanks, McGrath, Nome and other points. To cash in on the same demand for fresh food, the Matanuska farm colony in the summer of 1945 was preparing to build a \$300,000 airport so it could ship produce to remote parts of the Territory.

Alaska has 8,165 miles of Federal airways available for post-war use, complete with radio ranges, weather reporting and point-to-point flight information services. Since 1939 the Civil Aeronautics Administration has built thirteen major airports and eighteen intermediate landing fields in the Territory. None of these is less than five thousand feet long and three hundred feet wide. Some idea of the volume of air traffic in Alaska is furnished by statistics on the number of operations from fields in the Territory. In September, 1944, Anchorage airport reported 548 air-carrier (passenger, mail, and freight) operations and 386 itinerant (private civilian aircraft) operations. Weeks Field, at Fairbanks, did even better, with 609 air-carrier and 792 itinerant operations.

In Southeast Alaska most of the planes in local service are on floats, as there is more water than land in the Panhandle section. The unpredictability of flying weather in this area has given rise to the institution known as "suitcase drill." The air traveler, having a reservation say from Juneau to Fairbanks, reports at the appointed time, kit in hand, to the airway office, where he waits for a period of minutes or hours to be told that the flight has been cancelled. Then he is free to take his suitcase home and wait until the next day, when the process is repeated. This routine is varied occasionally by a ride to the airport and back or even by a brief flight, which circles back to land where it started. Finally, of course, the weather will break and the traveler really gets away. This may be the time when he said "Oh, the heck with it," and left his suitcase at home. Or the plane might finally make it a few hours after he said something similar and departed by steamer. In this case, he will not arrive at his destination until a week after the plane. Suitcase drill makes life exciting and unpredictable, although the strain of repeatedly kissing wives

and/or sweethearts goodbye is said to tell eventually on even the hardest traveler.

One Alaska aviation development which should not be overlooked is the certain growth of private and pleasure flying after the war. Even in the first six months of last year, the number of private planes in Alaska increased about twenty per cent. Small planes will find it perfectly feasible to fly to Alaska along the chain of airports connected by the Alaska Highway. In fact a 65-horsepower Aeronca was flown to Fairbanks from Chicago in the summer of 1944 by a dentist on vacation and making his first trip to Alaska. This amateur airman made the trip in one week, or fifty hours' flying time, via St. Paul, Edmonton, Fort Nelson, and Whitehorse. Storms over the brush country between Fort Nelson and Watson Lake caused him some anxiety, but all in all the flight was a thrilling experience. Providing en route accommodations for such air tourists of the future is an opportunity to be developed. Repair, service, and supply establishments for planes of all types will also be required in Alaska.

The tourist trade is one of the really promising fields of opportunity in the Territory. After the war Americans are going to want to enjoy some of the pleasures they have had to forgo for the past few years. Foremost among these pleasures is traveling. One of the places people desire most to visit is Alaska. A recent survey by *Time* magazine showed 340,000 of its readers were planning trips to the Territory soon after the end of the war. Alaska should be in a position to capitalize immediately on the largest tourist trade it has ever known. Here, almost at the door of more than a hundred million people, lies the greatest unspoiled recreation land in the world today. The Territory possesses unrivaled natural attractions in the form of scenery and the opportunity for outdoor recreation. There are few people who do not feel a strong desire to make at least one trip into the Northland to enjoy some of the unique experiences available only in the high latitudes. Mention of a few of these is enough to set in motion the imagination and kindle a desire to see for one-

self: the midnight sun, fiords where ocean steamers may sail among the very mountain tops, active glaciers, shining ice-capped mountains, alpine meadows abloom with brilliant flora, wildlife in an abundance reminiscent of the times before the white man came to North America, northern lights, the Eskimos and Indians with their strange customs and quaint crafts. All these attractions give Alaska a lure which no other part of the continent can rival.

As Henry Gannett, then Chief Geographer of the United States Geological Survey, put it in 1901: "One of the chief assets of Alaska, if not the greatest, is the scenery. . . . For thousands of miles the coast is a continuous panorama. . . . The Alaska coast is to become the showplace of the earth, and pilgrims, not only from the United States but from far beyond the seas, will throng in endless procession to it. Its grandeur is more valuable than the gold or the fish or the timber, for it will never be exhausted. This value, measured by direct returns in money received from tourists, will be enormous; measured by health and pleasure it will be incalculable."

Existing facilities for tourist travel to Alaska are far from adequate. They were not satisfactory even for the comparatively modest tourist trade which existed before the war. Better steamship accommodations particularly are needed, and this very likely will prove the bottleneck which may retard the development of a substantial tourist trade. But the advent of efficient air travel facilities between the States and Alaska provides a new challenge which the steamship lines can ill afford to ignore. The post-war carrier, whether water, air, or land, must be willing to keep pace with the modern traveler's demand for speed and comfort. In addition to improvements in transportation facilities, better resort and hotel accommodations will have to be provided. Here is an opportunity for private investment. A good rustic lodge or attractive auto court can be provided even with a modest capital outlay. If properly planned and managed, such an

enterprise should be highly profitable. Travelers are prepared to pay for really good accommodations.

It is surprising how many people appear to have quite definite intentions of going to Alaska after the war and operating service stations or auto camps along the Alaska Highway. The word of caution which is necessary in this regard is that many others have exactly the same idea. The whole question of the degree of use which the Alaska Highway will receive after the war remains to be resolved. Remember it is a very long gravel road, much worse than any road Americans have been accustomed to driving for pleasure. Most of it lies in Canada. It can be supplied only from the two ends and at Whitehorse, which makes everything expensive along the way. A study which was made of this subject last year indicated that an automobile trip from Chicago to Fairbanks and Anchorage and return would involve an out-of-pocket expense for food, lodging, gas, oil, and various miscellaneous items of about \$600 for two persons or \$1,050 for four. Inclusion of a reasonable figure for maintenance and depreciation of the automobile would add another \$300 to these totals. Such a trip would involve 8,000 miles of driving, and would require thirty-six days. Any extensive use of the highway by tourists, under such conditions, seems rather improbable.

Even so, no matter how hard the going or how monotonous and uninspiring the scenery, some tourist travel on the Alaska Highway is inevitable. The road has been too well publicized to be ignored. One preliminary estimate, based on 2,900 cars crossing the 141st meridian annually, foresees that each of twenty-two overnight stopping places along the system of connected roads in Alaska might entertain about seventy-five guests each night for a ninety-day tourist season. A resort of the size here contemplated would gross about \$50,000 a season. To assure proper development and prevent unsightly projects, a program for roadside facilities along the Alaska Highway within the Territory has been under consideration by the National Park Service. A

forty-mile strip, twenty miles on each side of the road, was withdrawn from entry to permit the Park Service to complete its study. In the summer of 1945 this withdrawal was reduced to ten miles. Some means of controlling the type of tourist enterprises, to get away from the gaudy hot-dog stand and the shacklike auto court which have defaced so many of the highways of the United States, probably will be worked out.

Alaska offers innumerable mineral springs and hunting, fishing and skiing locations capable of development as tourist attractions. The winter sports, for which especially favorable conditions apply, offer a means to spread the tourist trade out over the year and get away from a rigid seasonal pattern. Excellent ski runs are found close to several of the larger cities. A winter tourist trade of the most desirable kind might be built up if Alaska's potentialities along this line were properly developed and publicized.

The traveler to Alaska cannot fail to be impressed with the tourist-trade possibilities of this spectacular country. One recent traveler so impressed was Maury Maverick, Chairman of the Smaller War Plants Corporation, who said when he reached Juneau: "I knew before I ever came to Alaska that the tourist trade should be developed to the *n*th degree; now my opinion in this respect has been confirmed. The scenery between Seattle and Juneau on the Inside Passage is far superior to anything that I have seen, and they tell me I haven't seen anything yet."

He hadn't. And Alaska hasn't seen anything yet compared to the important tourist trade certain to develop in years to come.

OPPORTUNITIES IN TRADE, SERVICE, AND THE PROFESSIONS

ALASKA'S only home-grown millionaire made his money not from gold mines, salmon canneries, trap lines or sawmills, but by providing Alaskans with some of the manifold commodities and services they require in order to live in the North. His success came in such enterprises as sailing a steam schooner, running a drayage service, selling coal, and operating theaters, apartment houses, newspapers, and a radio station. In services such as these lies opportunity for some of the new Alaskans who will live in the developing Territory after the war.

Service industries normally employ about the same number of persons as are engaged in the commodity-producing industries. That is, every job based upon the extraction and processing of natural resources is matched by another in trade, service, or the professions. The ratio has never run quite that high in Alaska in the past. There are several reasons for this. The services have never been so highly developed in Alaska's frontier setting as they would be elsewhere. The large native population does not require services to the same extent as the whites. Many service functions for Alaska have always been performed outside the region, notably at Seattle. But even with all these adverse factors, among whites in Alaska in 1940 there were 9,767 in service industry as compared with 10,841 in commodity-producing industry. In conformity with national and regional trends, an expansion of services beyond their present level of importance can be looked for in the Territory in the future. It is probable that for every farmer, fisherman, miner, logger, or other worker added hereafter to the Alaska labor force an opportunity will be created for someone to engage in the service industries. And two new jobs means an increase of about five in Alaska's population, when dependents are taken into consideration.

Along the main streets of Alaska communities are found all the familiar retail outlets—grocery stores, meat markets, bakeries, liquor stores, drug stores, jewelers, hardware stores, women's apparel shops, dry-goods stores, furniture marts, florists, the five-and-ten, and so on. Most of them operate under difficulties not usually experienced by retailers in the States. Volume of business is relatively small. Sources of supply are far away, orders must be sent off to the wholesaler or jobber long before items are needed on the shelves, and fairly large stocks must be carried because of the impossibility of obtaining merchandise on short notice. This makes for a slow turnover of inventory capital. Transportation charges, often quite heavy, must be paid by the retailer and passed on to unwilling customers. Breakage and spoilage are substantial items. Credit at the bank costs the merchant eight per cent, and in most cases, to meet competition, he extends liberal credit to customers, even to newcomers. Delivery services are expensive to maintain. On the other hand, the Alaska retailer takes a good mark-up to compensate him for his trouble. In the end, it is the public that pays the bill. In connection with an investigation of steamship rates in 1940, the United States Maritime Commission found that the retailer's margin on food items, based on cost laid down in Alaska, ranged from seven per cent on eggs at Ketchikan to one hundred per cent on bacon at Seward. The average was around thirty-five per cent at Juneau, and forty per cent at Ketchikan and Seward. On furniture and appliances the average mark-up was forty-five per cent. On building materials it ranged from eight to 118 per cent. Last November, according to Juneau butchers, the mark-up on meat in that community averaged from nineteen to twenty-four per cent.

High prices prevailing in Alaska are discussed elsewhere. A few examples might be cited here. Florists, who can raise some of their flowers in greenhouses but still must import many items, were advertising carnations at Fairbanks in the winter of 1944-45 at \$5.75 a dozen, corsages at \$2.25 and up, and wreaths and sprays at \$6 and up. Special opportunities probably exist

in Alaska for sporting-goods stores and men's apparel stores which specialize in outdoor clothing. One 40 x 100-foot men's furnishings store in Fairbanks is reported to have enjoyed a gross business of \$650,000 last year. No department stores, as they are known in cities in the States, yet exist in the Territory, although there are many general merchandise and dry-goods stores which have expanded to include apparel, shoe, gift, toy, and other departments. Bookstores should do well in meeting the demand created by Alaskans' well known penchant for reading. One type of retail outlet of which there is an apparent abundance is the liquor store. Taking stock recently, Fairbanks found it had issued licenses to seventeen bars, twenty retail "bottle" stores, two wholesalers, one importer, one restaurant, and one club—all operating within the city limits of a town of not over eight thousand population. Numerous other establishments of the same type were operating around the fringes of the community. The price of liquor by the drink ranges upward from forty cents, the OPA ceiling on a one-ounce "shot."

Most of the wholesaling for the Alaska market is done outside the Territory nearer the source of supply, retailers dealing directly with merchandise brokers in the States. As Alaska population grows and the Alaska economy diversifies, many of these wholesale functions doubtless will move north. Mail-order houses do a good business throughout Alaska, and special "order offices" are maintained by Sears, Roebuck and by Montgomery Ward in the principal Alaska cities. In interior and northern Alaska, a large chain, the Northern Commercial Company, which developed from a string of frontier trading posts, does a good share of the retail business.

Services for which new opportunity will be created by an expanding Alaska population include banks, beauty parlors, book binderies, bottling plants, cabinet works, cleaning establishments, cold-storage plants, credit and finance agencies, delivery services, lending libraries, mortuaries, newspapers, photo shops, print shops, tailor shops, and a whole spectrum of other estab-

lishments. Good eating places are few and far between in Alaska. Just ask any traveler who has had to stay for as long as a week in any Alaska community. Opportunity is knocking on this door at the present time. Barbers fare well in Alaska, in most places charging \$1 for a haircut. There has been an acute shortage of laundry service; before the war many of the laundries were operated by Japanese, who were taken into custody after Pearl Harbor. Some ninety insurance companies are represented in the Territory by seventy-five agents and brokers, a number of whom year after year write more insurance than ninety-nine per cent of their counterparts in the States. In the amusement field, there probably will exist after the war numerous opportunities to establish theaters, bowling alleys, skating rinks, dance halls, and swimming pools. Small bands and orchestras have always found ready employment. Alaska is a vast unworked field for door-to-door solicitors, the sellers of hosiery, brushes, vacuum cleaners, and books. No business colleges exist in the Territory, although a need for them is apparent in half a dozen communities. Someone is going to make a lot of money some day out of an Alaska advertising agency. A good photoengraving plant could count upon a steady volume of Alaska business. Radio stations have been established at Ketchikan, Juneau, Fairbanks, and Anchorage, but not in other centers. In an era of expansion, electrical, roofing, and sheet metal contractors should do well, as should firms specializing in plumbing, heating, and air conditioning, or in painting, paperhanging, and decorating. The renting of drive-yourself cars would seem to be a promising enterprise, especially in Southeast Alaska, where there are no through highway connections and many people—residents and visitors—do not feel it worth while to maintain automobiles of their own for casual use.

The utilities offer some opportunities. Telegraph service is not a feasible field for private investment, but several community telephone systems probably will be installed within the next decade. Many electric power and water systems throughout

Alaska are privately owned, although a trend toward public ownership is evident here as elsewhere. Local transportation—bus lines and taxi service—furnishes good possibilities in some communities. Repair services will be needed in a number of fields: automotive, electrical appliance, clothing, farm equipment, airplane, household equipment, machinery, tractors, office equipment, radio and shoes, to mention some of the more obvious.

Lenses for eye-glasses are not ground in Alaska. The best one can do here is to have a prescription issued by the oculist (who is likewise non-existent in Alaska) or by the optometrist, and then send it to Seattle to be filled.

Service workers were still in demand in many parts of Alaska even at the low ebb of job opportunities in the 1944-45 winter. The United States Employment Service in Juneau was seeking (unsuccessfully) in December to fill openings for registered pharmacists, automobile painters, a body-and-fender man, office workers, cashiers, and a telephone operator for a cab stand. A newspaper advertisement offered any salary within reason for an experienced bookkeeper.

A new country offers especially advantageous opportunities for individuals seeking to become established in the professions. Dr. J. H. Romig, who achieved nationwide fame as the "dog team doctor," recently had this to say: "If I were again a young man of 24, I'd sure go back to Alaska and do it right over again. . . . There is nothing that can touch it for opportunity. . . . I predict that when the war ends there will be the greatest rush north that this country has seen since the Oklahoma stampede of 1886, when oil was discovered there and the Territory was opened up for development."

Dr. Romig thinks there will be 200,000 people in the Anchorage area alone in another generation. If Alaska gains population at anything like this rate, the Territory will need many hundreds of doctors, dentists, lawyers, teachers, engineers, and architects. In fact it needs a good many now. Three new lawyers recently

hung out their shingles at Fairbanks, one of them hanging his from a hotel room, as that was the only "office" he could find. Alaska has one dentist with a floating office, who cruises for business along the coast; another who flies from settlement to settlement in the Yukon Valley; still another who covers a vast area each year by dog team. And the Territory has need of many more such. Admission to the professions is regulated by a number of Territorial boards, including the Board of Law Examiners, Board of Engineers' and Architects' Examiners, Board of Pharmacy, Board of Optometry, Board of Chiropractic Examiners, Board of Medical Examiners, Board of Dental Examiners, Board of Cosmetology, and Board of Accountancy. All provide for issuance of licenses to qualified persons who transfer from States whose standards come up to those of the Territory.

For women, there are good opportunities for nurses, teachers, and office workers, to mention only a few occupations. Aside from the wide field of private employment, the Federal and Territorial governments offer many attractive positions in Alaska. The Federal agencies are subject to civil service regulations, but most of them do the greatest share of their recruiting right in the Territory. A salary differential of twenty-five per cent is allowed Federal employees in Alaska to compensate for the higher cost of living. The Territorial Government is quite separate from the Federal and has its own employment policies. Personnel for certain Territorial offices is recruited through the Alaska Merit System, which is a Territorial civil-service agency set up along very modest lines.

Alaska has always proved attractive to teachers. The city schools normally have long waiting lists of applicants for positions. These applications come from all parts of the United States, giving Alaska school faculties a definitely cosmopolitan character. During the war, in common with many other sections, Alaska experienced some difficulty in filling teaching positions, and a good many emergency, temporary licenses have had to be issued. Salaries, by ordinary standards, are very high, the

minimum allowed by law being \$2,250 per year in Southeast Alaska, \$2,475 in southwestern Alaska, and \$2,625 in the interior and northwestern sections. In addition to the city and rural schools of the Territorial system, schools are maintained throughout Alaska by the Federal Government for the benefit of native children. Many of these are in isolated villages, where the teacher may be the only white person for hundreds of miles around. In such a situation, the teacher often finds herself acting out the role of adviser, medical practitioner, and mother confessor to the entire village, as well as weather observer and radio operator—in brief, the vital connecting link between the primitive life of the native and the complicated ways of the white man. This life of unselfish devotion to the service of others apparently appeals to many persons, for while the turnover in such personnel is naturally high, a surprisingly large number stay on year after year. Rather limited opportunities for instructors in higher education are provided at the University of Alaska at College, a suburb of Fairbanks, although these opportunities will expand as the institution grows. Under consideration at the present time is a proposal to establish a Southern Branch at Ketchikan to specialize in the fisheries and forestry fields. An act setting up a teachers' retirement system was passed by the 1945 Legislature.

The field of service industries is so broad that it is more than likely the particular pursuit in which you are interested has not even been mentioned in this brief discussion. This does not mean, of course, that a very good opportunity does not exist for you in Alaska. Only a few of the more obvious possibilities have been suggested. A "service" is just that—meeting a need of the people. These needs change. To meet a new one, an enterprising individual at Fairbanks recently opened an information bureau to answer, for a fee, questions from people interested in Alaska.

MISCELLANEOUS OPPORTUNITIES

THERE are literally thousands of them—opportunities for small manufacturing plants, or even home industry, to turn some of the heretofore neglected resources of Alaska to account. A few of these opportunities have already been mentioned under the various major resource headings, the fisheries, forest industries, agriculture, etc. Many exist outside these recognized fields.

For instance, there is a large and lucrative market awaiting the person who will devise a process to dry Alaska peat, a material which exists in virtually boundless quantity and for which there is a consistent need throughout the United States. Peat is used for horticultural purposes, poultry litter, stable bedding and fruit and vegetable packing. That it is a valuable product is demonstrated by the fact that in the last four years preceding World War II approximately 75,000 tons a year, worth more than \$1,000,000 were imported into the United States from Europe. The Pacific Coast peat market alone amounts to about 250,000 bales of 100 to 120 pounds apiece. The peat bogs of Southeast Alaska are by far the most extensive occurring in the coastal sections of the United States. They frequently occur within a few hundred feet of salt water, and a single meadow or “muskeg” may cover several thousand acres. Depth of the commercial bodies of peat in this area varies from three to twenty feet.

The single deterrent to development of a substantial Alaska peat industry has been failure to find an economical method of mechanical dehydration. The Alaska product is usually acid in reaction, which makes it of particular value in improving alkaline agricultural soils of sections of the Pacific Coast. A sample ton of Alaska peat shipped a few years ago to importers of European peat was declared by these importers to be the equal of the foreign import in every way.

Then there is seaweed. Alaska's coast produces immense quantities, comparable in abundance with that grown along the California coast. Southeast Alaska is estimated to have 142 square miles of seaweed beds, the potential potash production from which would be 598,000 tons. An additional eighteen square miles, which would produce 136,000 tons of potash, are available in the southwestern part of Alaska. An important component of seaweed is iodine, which is used not only as an antiseptic but as a useful laboratory reagent, in animal feeding, and in a variety of medicines and biological counter-agents to disease. Potash and iodine are constituents of the ash or residue of seaweed.

The body of the plant consists mainly of organic material, special types of carbohydrates, proteins and fats occurring in the form of calcium salts. Algin is the calcium salt of alginic acid, which is used commercially as a stabilizing and deadening agent in the manufacture of explosives and in scores of other industries. Fucoidin is the calcium salt of fucic acid, a derivative of fucin, which is a basic material in fermenting processes leading to acetone, alcohol, acetic acid, and other chemical products. Agar may also be produced from seaweed, and is being so produced in a plant in California.

Speaking of seaweed brings to mind the "invention" of one Southeast Alaska housewife in making mustard pickles and sweet pickles from the ordinary kelp known as bull kelp. The "pickles" were said to taste better and be more nutritious than those made from young cucumbers. Somebody might make a living in Alaska packing kelp pickles commercially.

The wild berries which grow in quantities throughout Alaska suggest commercial use in jams, jellies, preserves, or wines. Some varieties are not found elsewhere in the United States, and might be the basis for specialty products and delicacies unique to the North.

Commercial cranberry production on the bogs of Southeast Alaska may be an important enterprise in the future. The bogs of this area are similar to those of Grayland, the State of Wash-

ington cranberry center. This development appears especially promising due to the limited area adaptable to cranberry production in the States, the large demand for cranberries which cannot be met by domestic production at the present time, and the high price and good shipping qualities of the product. The annual Alaska commerce report for 1939 showed the export of 1,156 pounds of cranberries to the States. The bogs or muskegs of Southeast Alaska are quite similar in composition to the sedge peat formations on which cranberries are grown in western Washington, while the general topography of the Alaska bogs makes for even easier and cheaper drainage. It has been estimated that the initial cost of land, scalping, ditching, sanding, and planting in Alaska would amount to only about one-fourth the \$1,000-per-acre average cost at Grayland.

Fur processing is a field of activity which has never been exploited in Alaska, despite the fact the Territory produces several million dollars' worth of furs each year. These are shipped raw to the States for processing and manufacture—the old Alaska story. While it may be true that Alaska is too far from the fashion centers ever to become a great fur manufacturing region, there seems to be no good reason why some of the first steps of processing could not be performed in the Territory, and furs exported in semi-finished state. Many of the furs arriving in normal times in the New York market from Asia, for instance, are in this semi-processed condition. A fairly large and growing market exists in Alaska for fur garments for Alaska residents. Certainly a fur-manufacturing opportunity exists for a limited number of people with experience in this line.

Although Alaska is supposed to be the greatest game country in North America and many trophies are taken here, sportsmen who wish their big-game heads mounted or their big fish stuffed send them to Seattle or to Jonas Brothers in Denver. I do not wish to state categorically that there is no taxidermist in Alaska, but if there is he is not of sufficient repute to be generally known.

It would seem there are opportunities for at least one taxidermist in each of the larger towns.

The quite substantial undeveloped water-power resources of Alaska probably have not been given as full treatment as they deserve in the brief discussion included under the forest industries heading. On the basis of examinations made over a period of twenty-five years, Southeast Alaska alone is said to have 199 undeveloped water-power sites, which have a total firm-power capacity of 600,000 kilowatts. Firm-power capacity at four of the sites exceeds 20,000 kilowatts, at six it is between 15,000 and 20,000 kilowatts, and at ten it is between 8,000 and 15,000 kilowatts. The balance range from 7 to 6,800 kilowatts, the average for all 199 being 2,900. Many of these can be developed at relatively low cost. Only preliminary surveys have been made in other sections of the Territory. Some hydroelectric possibilities are known to exist in South-Central Alaska on the Bering, Copper, Chitina, Nizina, Kuskulana, Kotsina, Klutina, Tiekela, Tsina, Kenai, Russian, and Little Susitna rivers, as well as on many lesser streams of the area. The great bulk of the undeveloped water-power resources lies in Southeast Alaska. Some thirty hydroelectric developments of one hundred kilowatts or more installed capacity have been built in the Territory.

Has anyone ever tried to grow sugar maples in Alaska? The limited production of maple sugar and syrup in New England, and the high price always commanded by these delicacies, promises ready returns to a commercial enterprise of this kind in Alaska, if the trees will transplant successfully to some locality such as Fairbanks. There are innumerable possibilities of this kind, in borrowing from other parts of the world ideas and techniques which might prove quite spectacularly successful in Alaska.

A special opportunity should exist in Alaska for water-well drillers, in view of the probable establishment of many new farms and homesteads. Wells are the principal means of water

supply in both the Tanana and Matanuska valleys. A ready-mix concrete plant opened recently in Fairbanks to capitalize on an obvious opportunity, which also exists in several other centers. Because of high freight charges to Alaska on bulky commodities, local mattress and upholstery factories ought to be able to develop on a small but sound basis. The same is true of trunk and luggage factories.

One field offering almost limitless possibilities is the manufacture of souvenirs. Alaska materials, from wood to furs, are adaptable to this purpose. The visitor to Alaska, whose name probably will be legion within a few years after the end of the war, will want to purchase a few mementos of his trip and will also want to take gifts to the folks back home. Clever novelties will find a ready market here. And this activity is not necessarily one which need compete with the Indian and Eskimo crafts, which are rather rigidly limited in scope of products and in quantity of production.

Alaska is par excellence a land of the small boat. Not only are large numbers of craft of various types employed in the important fishing industries, but vessels ranging from rowboats to quite elaborate motor cruisers are used for business or pleasure travel along the many thousands of miles of Alaska coastline. Yet boatbuilding and boat-repair facilities are almost entirely lacking in the Territory. One small marine ways at Ketchikan keeps busy. Similar enterprises should be able to thrive in half a dozen other Alaska ports.

Capital, in some cases quite substantial capital, is required to exploit most of the opportunities which have been mentioned in this and the foregoing chapters. But a greater total of private savings exists in the United States just after World War II than at any other time in history. It would be difficult to find a better place to invest some of this than in promising private enterprises in an expanding Alaska. Government assistance to service men, and possibly others, who wish to establish small manufacturing plants or other businesses in Alaska after the war may be forth-

coming. In the summer of 1944, Maury Maverick, Chairman of the Smaller War Plants Corporation, visited the Territory to investigate opportunities for service men and to plan a program of assistance along this line. Since that time a bill has been introduced in Congress authorizing the Smaller War Plants Corporation to spend up to \$100,000 investigating the possibilities of helping war veterans to establish independent businesses in Alaska. The Veterans' Bureau recently opened an Alaska office at Juneau to assist returning service men with problems of all kinds. Alaska has sent about five thousand men into the armed forces in this war. That the Territory probably will appeal strongly to service men seeking to pick up the threads of civilian life anew is indicated by experience following the First World War. More than nine thousand veterans of that conflict settled in Alaska in the years between the wars.

The record of new corporations which file with the Territorial Auditor to qualify to operate in Alaska gives some idea of the fields of opportunity as they are seen by groups which are actually going into business. In fiscal 1943, thirty-nine corporations qualified, fifteen of them formed in Alaska and the other twenty-four filing from outside. Ten were non-profit, eight construction, four mercantile, three electrical, two mining, two airways, two cooperative, two dairy, two drug, two fisheries, and two transportation. Only four were in the traditional Alaska industrial fields of mining and fishing. Enterprisers are looking to new things, and even in Alaska the old order changeth.

PART III

HERE ARE SOME OTHER THINGS YOU'LL
WANT TO KNOW

THE PLEASURES AND PAINS OF LIFE IN ALASKA

IN MOST of its details, life in Alaska is pretty much like life anywhere else under the Stars and Stripes. People dress in the styles they see pictured in the magazines or the movies, and their clothing bears familiar brand labels. They live in five-room bungalows which are heated by oil burners, and they have lawns and gardens to tend. They have daily newspapers to read. As nearly as they can manage, they eat the foods found on tables all over America. The children go to school when they are six, and don't like it a bit better than they do anywhere else. There are motion pictures and baseball games, and a parade on the Fourth of July. Alaskans are interested in politics, and they lay bets on such things as just when the war will end.

All this is descriptive of the town-dwelling Alaskan, who, as has been pointed out, is in the majority. Out on the farms, life is like farm life in Iowa—early rising, hard work, big meals, and a satisfied feeling at the end of the day. In the isolated mining camps or cannery locations, things are different. Men there are farther from civilization and closer to nature, but not to any important degree more so than they would be in similar circumstances in the wild lands of the United States proper. In short, for the most part life in Alaska is the pleasant American life with which we are all familiar.

Beyond the daily details of existence, however, there are some important points of difference. Most of them can be summed up under the heading of isolation—a factor which has been gradually losing its zip in recent years. But it still has a decisive influence on Alaska life. By geographical location, governmental arrangements, and the absence of certain familiar services, Alaskans are always conscious of being set apart from most of the rest of their fellow citizens. There is some grumbling about this,

but in moments of perfect candor most Alaskans would probably admit that they take a certain amount of delight in their unique situation, in being different. Alaska is not just another State, but a Territory, and in the eyes of many of its citizens it will lose a good deal of its charm on the day it becomes just another State.

To an extent which those who have not lived there may find it difficult to appreciate, most of the people of Alaska are isolated in separate small communities which generally have no very close transportation, economic, or social connections with one another. This situation is a product of the geography of the country and persists despite the remarkable job of "tying together" which has been accomplished in the past few years by new highway construction. The resident of Juneau is, for most purposes, as far from the citizen of Skagway, only a hundred miles away, as he is from a person who lives in Seattle. It is still impossible in most of the towns of Alaska to do what once was so commonplace in the States (and will be again)—get in the family automobile and drive to another place. Most Alaska communities must be little worlds in themselves. This is true particularly in Southeast Alaska, where the bulk of the people live and where some of the most substantial opportunities exist for further early development. Ketchikan, Wrangell, Petersburg, Juneau, Sitka and Skagway are a half dozen distinct communities which have no road connections and probably never will have. When you get off the boat or airplane at one of these places, there you are until a boat or airplane takes you away. You will "feel" this when you live in Alaska and for most people it will be a new experience, something like the desert isle you dreamed about when you were young, though with all the modern conveniences.

Although at most Alaska towns there are only short stretches of local highway on which to drive, this does not discourage automobile ownership in the Territory as much as might be expected. Auto registrations total over four thousand, or about one automobile for every eighteen persons. This is fewer per capita than any State, but quite remarkable in view of the very limited

driving opportunities which exist. A ride out even a 15-mile stretch of highway brings a diversion which is welcomed by most people, particularly where the scenery-per-mile runs at as high a rate as it does in Alaska. Automobiles are not a necessity in the Territory, nor are they elsewhere, but they are good to have in most Alaska communities. The cost of shipping a car from Seattle to Juneau is about \$85. It is not possible to drive very far out of any of the Southeast Alaska towns (except Haines), or from Seward, Cordova, Whittier, Kodiak, Eagle, Nenana, Fort Yukon, Tanana, Ruby, Bethel, or Nome. Most of the interior points mentioned will ultimately be connected by road with the expanding Alaska highway system, which has spread out phenomenally in the last few years through construction of the Alaska Highway, Glenn Highway and Haines Cut-off. Places in the Territory which are now connected with one another, and with the States by way of the Alaska Highway, include Haines, Valdez, Anchorage, the Matanuska Valley, Copper Center, Chitina, Gulkana, Gakona, Northway, Tanana Crossing, Fairbanks, Livengood, and Circle. A table of distances between these and other points is included at the back of the book. Taxi service, usually surprisingly good, is available in most Alaska towns. Juneau, for instance, is served by about thirty taxis, which before the war did a thriving business at a rate of twenty-five cents to any place in town. Gasoline rationing was not in effect in Alaska, although tires have been just as hard to get during the past few years as in the States.

The isolation of communities makes intercity sports and other recreational and social activities almost impossible. Occasionally lodge bowling teams or high-school basketball teams will arrange a trip to compete in other towns, but usually the costs in time and money are too great. In 1940 the Petersburg basketball team went to Fairbanks; the trip cost \$1,200. Under such conditions it is not surprising that the people of the Territory lack to a large extent the common interests and common objectives which are the basis of a healthy commonwealth. Interests

tend to be local rather than Territorial, a state of affairs which is agonizingly apparent at each biennial session of the Legislature. The facilities and services which the average Alaskan enjoys are usually limited to those supportable by a population of not over a few thousands. These are disadvantages which will disappear or lessen as population increases and transportation improves.

Mail service to Alaska and between Alaska places has speeded up materially in recent years, especially since the institution of air mail, but is not yet up to United States standards. The mail must depend upon the trains, boats, and planes, and can be no faster than those facilities. If it makes just the right connections, an air-mail letter from Alaska can make phenomenal time, but there have been many occasions when boat mail has proved faster. Postal rates are the same in Alaska as anywhere else in the United States, except that all parcel-post matter between Alaska towns travels at the eighth zone (highest) rate, even if the towns are only a few miles apart. There is no carrier delivery of mail, which gives Alaska towns the largest number of postoffice boxes per capita of any section under the American Flag. Anchorage, with about two thousand boxes, has more than any other United States postoffice, and Juneau is next with nineteen hundred.

Telegraphic service between thirty-nine stations in Alaska and the outside world is maintained by the Alaska Communication System, a branch of the Army Signal Corps, which connects at Seattle with Western Union. Between most points, messages travel by radio rather than wire. Scrambling devices are used to discourage listening in on private messages. Commercial rates are charged for this service, with either a ten-word day message or a fifty-word night letter to Seattle costing \$1 from Ketchikan, \$1.50 from Cordova, and \$2 from Anchorage, Fairbanks, Nome, or Kodiak. Radio telephone service is available from Juneau and Ketchikan to any points in the world which may be reached by telephone. Sample rates of \$6 for three minutes in daytime or

\$4.50 at night to Seattle, and \$11 day or \$8.50 night to New York recently were reduced by one-fourth.

Daily newspapers are published at Ketchikan, Juneau, Cordova, Seward, Anchorage, and Fairbanks. These papers subscribe to national press services, whose dispatches, in "skinned down" form, are transmitted to Alaska by telegraph. Usually these daily papers have six or eight pages. They sell for ten cents a copy. There are also weekly, semi-weekly, or several-times-a-week papers published at Wrangell, Petersburg, Sitka, Valdez, Palmer, and Nome. A weekly paper covering the Alaska news-front in general is published at Seattle. Alaska magazines are published at Ketchikan and Seattle.

From the time of the Gold Rush and even before, Alaska has suffered from a fortune-hunter's complex which has motivated so many of her inhabitants. The Territory has always attracted hardy, adventurous men who preferred to gamble on a quick fortune rather than spend their years in routine toil. Most of those fortunate enough to "strike it rich" didn't waste much time in Alaska thereafter. They headed "Outside" to invest their winnings. Even today, too many people who are living in Alaska feel they are there only temporarily. They are not interested in establishing homes, but in getting a stake and getting out. Too little interest is shown in building up the kind of communities which will appeal to people as places to raise their families and spend the rest of their lives. The Territorial Legislature, heretofore dominated largely by the big gold-mining and salmon-canning companies, has refused to tax Alaska to provide the services and facilities required in the twentieth century for a satisfied and stable population. Anything except the bare necessities of government, which could not be avoided or have their costs passed on to the Federal Government, has been derided as "extravagant foolishness" and left out of the appropriation bills as they were finally enacted.

Alaska is the least taxed political entity under the American flag. All the usual Federal taxes, including income and excise

levies, are collected there, to be sure, but the Territory levies no personal or corporate income tax, no sales tax, no cigarette tax, not even a general property tax. The only tax most residents of Alaska are required to pay is a \$5-a-year "head tax" collected to support the schools, and which falls far short of meeting that need. Through a legislative "program" which they have controlled through the lobbyists who camp at Juneau sixty days every other year, the absentee canning and mining interests have achieved the remarkable result of fastening on themselves almost the entire burden of Territorial taxation. Of course they have also achieved their main object, which is to keep expenditures to a minimum. In the last pre-war biennium, the canned-salmon industry paid directly about thirty-two per cent of Alaska's total tax bill, the mining industry twenty-four per cent, the liquor traffic nine per cent; and the balance was met by license taxes on business, trade, professions and occupations, and by the \$5 school tax already mentioned. The Alaska tax system—if it can be called that—is about as crude and unscientific as could be imagined. Yet attempts to reform it have been defeated by narrow margins in the last few sessions of the Legislature. There are definite signs, however, of the gradual awakening of an informed citizen-consciousness which will improve the situation. Hand in hand with low taxes have gone wholly inadequate governmental services. Cheap as it has been, government in Alaska has been no bargain for Alaskans.

The Territory has no public debt, and in recent years has managed to keep a balance of something like \$1,000,000 in the treasury. The situation may be summed up by saying that not very much is collected in taxes, but even less is returned in the way of tax benefits. Total annual tax revenue is around \$2,000,000. The principal tax on salmon is a per-case tax bearing no relation to the value of the pack, but averaging less than two per cent of that value. The tax on gold is three per cent of gross production, but since the first \$20,000 of production for each operator is tax free, the amount realized falls far short of that

percentage of the total mined. The Territory levies no tax on banks. Public utilities pay one-half of one per cent of gross income. There are license taxes of \$10 on most classes of professional men. Many categories of corporations, partnerships, and individuals enjoying substantial income within the Territory pay no taxes whatsoever.

Municipalities, of which there are twenty-three incorporated in Alaska, are permitted to tax real and personal property a maximum of two per cent. Actually most of them set the rate below this limit and assessed valuation on the whole is low. In 1943 it was around \$45,000,000 for the twenty-three towns.

The Territorial form of government under which Alaska operates is not very satisfactory to anyone. It was designed for use during a brief period of Federal tutelage while a frontier area prepared itself to accept the responsibilities of Statehood. In Alaska it has gone on and on. Where it has shown signs of breaking down it has been patched or propped up temporarily, until the system at the present time consists almost entirely of patches and props. Alaskans actually possess very little voice in Alaska governmental affairs. The Legislature has authority in certain limited fields, but most of the governing is done by the Federal Government from Washington. The Governor is appointed by the President. He has a veto power over legislative acts, which also are subject to Congressional negation.

Alaskans do not vote on national candidates or issues, though you would think they did to hear the discussion which goes on. The Territory has no national Senators or Representatives, but elects a Delegate, who has a voice but no vote in Congress. As a matter of fact, the Delegate has managed, especially in recent years, to be extremely effective in Alaska's behalf. Other officials elected by Alaskans include a Territorial Auditor, Treasurer, Attorney General, Highway Engineer, and Labor Commissioner. Also elected are the members of the Legislature, sixteen in the Senate and twenty-four in the House. The 1945 Legislature was the first of this size, which is almost double what

it has been heretofore. Each of four arbitrarily created divisions elects four Senators, but there is an attempt at adopting population as a base for representation in the House, where the First Division has eight members, the Second four, the Third seven, and the Fourth five.

The courts are entirely a Federal responsibility in Alaska, as is law enforcement. A United States District Court is located in each of the four Divisions, with headquarters at Juneau, Nome, Anchorage, and Fairbanks. Probate and justice court duties are assigned to United States Commissioners widely distributed throughout the Territory. Municipal courts of limited jurisdiction are maintained in the incorporated towns. Most executive functions are conducted by the various Federal bureaus. In 1941 there were 1,500 classified civil service employees in the Territory. Now, due to the expansion of war agencies, there are many more than that. Control over fisheries, forests, wildlife, the large native population, and the vast public domain is exercised from Washington.

Politics are enjoyed and indulged in as much by Alaskans as by Americans everywhere. Small voting delegations from Alaska attend the national conventions of the major political parties. The Territory has voted Democratic by pluralities of landslide proportions ever since 1932. All the elective Territorial officials since that time have been Democrats. The 1939 Legislature had twenty-three Democrats and one Republican. That of 1945 has, in the House, twenty Democrats and four Republicans, and in the Senate fourteen Democrats and two Republicans. At the time of the 1940 Presidential election, a "don't count" vote was conducted at Ketchikan under the sponsorship of the city. Voters registered and cast ballots just as in the Territorial election. Roosevelt defeated Willkie 793 to 399. The number of votes cast was thirty-three more than Ketchikan had recorded in the official Territorial election two months earlier.

The absentee control of Alaska's government is no more satisfactory than the absentee control of her industries. To the

arguments of Alaskans for a larger share of self-government, however, it could be answered with validity that the Territory has not been making very effective use of the powers already granted it, as for example the tax power. Because the Federal Government is the great landlord over most of Alaska and because the Federal Government has exercised a generous paternalism toward the Territory in recent years, Alaskans tend to shirk many governmental responsibilities which could already be theirs, and to direct all their pleas toward Washington. Many Alaskans will argue that Statehood should be avoided, since it "would cost more than it would be worth." The validity of this argument depends upon what value is set on self-government. The Chambers of Commerce in Alaska which have solemnly resolved against Statehood on the grounds given apparently don't set so high a price on political freedom as did, for instance, the rebels of '76. There seems little doubt the cost of government to Alaskans will go up when Alaska becomes a State. This cost is so low at present it couldn't very readily go down. A tabulation prepared a few years ago showed Federal Government expenditures in Alaska in the ten-year period 1928 to 1937 to be \$126,000,000, while receipts were \$28,000,000. The Territorial Government in the same period spent a little over \$14,000,000. Both expenditures and receipts of the Federal Government in Alaska have gone up greatly in the past few years. In the 1944 fiscal year alone almost \$19,000,000 in Federal taxes was collected in Alaska.

Statehood is certain to come forward more and more forcibly as Alaska grows in population in the next few years. The right to govern themselves is a natural aspiration of Americans. Alaska's new Delegate to Congress campaigned on a strong Statehood plank. A bill which was pending in Congress in the spring of 1944 to grant Statehood to Alaska died when the Interior, Justice, Navy, and War Departments recommended adversely, due primarily to the fact that Alaska was then a war base. Another Statehood bill has since come before Congress, and the

matter is going to come up again and again until Alaska does finally become a State. The 1945 Legislature memorialized Congress to grant Statehood; it also passed a bill providing for a referendum vote in Alaska on the subject.

In a region as sparsely settled as Alaska, it might be expected that school facilities would be very inadequate. In so far as the white population is concerned, however, this is not the case. The Territory maintains a system of public schools which compares well with those of some States. There is no vocational training, however, and extra-curricular activities are sadly deficient. The percentage of children attending school is substantially larger than in the United States as a whole. The faithful interest of Alaskans in the education of their children is, no doubt, a reflection of their own high educational attainment. The percentage of white persons who have a college education is almost twice the national average. The proportion having high school education is also above the national average by a good margin.

With regard to education of the native peoples of Alaska, the picture is by no means so favorable. It must be understood, of course, that almost half of these still gain their living in primitive fashion, by hunting, trapping, fishing—a living supplemented by meat and skins provided by the semi-domesticated reindeer. The business of living in this mode requires much “education” not contained in the school books of the white man and not imparted by schoolroom instruction. In sections such as Southeast Alaska, where natives gain their living through employment in industry, the educational needs of the native people are not much different from those of the whites. The difficult problem of devising an educational system that will thus meet the variable needs of the Alaska native people is recognized by the Office of Indian Affairs, which maintains the native schools.

The system of schools maintained by the Territory is designed to serve the needs of the white population, though native children may and some do attend these schools. The Territorial

schools are of two kinds. Incorporated towns function as school districts and allocate part of their tax revenues to school purposes, though the Territory supplies the larger share of financial support. For rural schools outside the incorporated places, the Territory assumes full financial and administrative responsibility. In the school year 1944-45 there are 56 schools in the Territorial system. Attendance averages around 6,800 and the total number of teachers is 305. All of the city schools except one offer full four-year high-school courses, and twelve of them are accredited by the North West Association of Secondary and Higher Schools. Seven rural schools offer two years or more of high-school instruction, and four of these give the full four-year course. Palmer is the only rural school accredited. The small size of most schools in Alaska is a handicap when it comes to offering vocational or specialized courses, the schools having of necessity to limit the curriculum to basic subjects. But the quality of instruction compares favorably with the best in the States. This high standard has been fostered by a salary policy aimed at securing teachers with good training and experience. The willingness of Alaska to bear the cost of a good school system is indicated by the expenditure per pupil in average daily attendance, ranging from \$141 to \$196 in the 1940 school year, as compared with a United States average of \$105.

Higher education in Alaska dates from 1915, when the Alaska Agricultural College and School of Mines was set up. In 1922 the institution was somewhat broadened and became the University of Alaska. The campus is located at College, about two and a half miles from Fairbanks. The University offers bachelor degrees in liberal arts, mining engineering, agriculture, civil engineering, home economics, general science, business administration, pre-medicine, and chemistry. In 1942, the faculty consisted of thirty-six full- and part-time members. Previous to the war, the regular students numbered about three hundred a year. In addition, short courses and mining extension courses were given to more than a thousand persons a year throughout the Territory.

Funds for the University are appropriated mainly by the Territorial Legislature, with some assistance from the Federal Government.

Despite the interest of the Territory in an adequate school system and a program of education adjusted to the peculiar needs of Alaska children, and in spite of the large college graduate group in the population, library facilities of the cities and towns are extremely inadequate. Outside of the towns they are completely lacking. Such libraries as exist are poorly housed, small in number of books, poor in quality of books, ill staffed and too infrequently open, and in addition many customarily charge a fee for borrowing books. Thus, many factors discourage their use. Alaskans, however, are great readers of newspapers and periodicals.

Churches of almost every denomination are scattered throughout the Territory. Mission activities by several denominations have been influential in the development of the Territory and in the education of the native population in remote areas. Due to the early Russian influence, Greek Orthodox churches exist in many towns and are a picturesque architectural feature.

Considering the frontier character of the Territory with its small widely scattered population, the available medical and hospital services are remarkably good. In normal times, all of the larger towns are well supplied with capable physicians and dentists. Small general hospitals, under either private philanthropic or public auspices, have for many years been operating in Ketchikan, Wrangell, Petersburg, Juneau, Skagway, Haines, Cordova, Valdez, Seward, Anchorage, Seldovia, Kodiak, Palmer, Fairbanks, Fort Yukon, and Nome. Not all of these hospitals have adequate equipment and staff, but most of the larger ones do. The Alaska Territorial Department of Health in collaboration with the Federal Public Health Service carries on a comprehensive program of public health and medical services. It includes communicable disease control, maternal and child health services, services for crippled children, public health and sanitary

engineering service, and operation of two laboratories for disease detection and bacteriological tests. About twelve field nurses are stationed at various points throughout the Territory to carry on the educational program. The Office of Indian Affairs operates seven more small hospitals.

Recently a floating public health clinic began carrying the Territorial Department's services to people along the Alaska coast, after a cruiser had been equipped for the purpose and christened the *Hy Gene*.

In general, the health of Alaskans is not so bad as is sometimes represented. There is a favorably low incidence of most types of disease. Low Alaska death rates from cancer, cerebral hemorrhage, nephritis, and diseases of the heart may be explained, at least in part, by saying these are "diseases of civilization," particularly among older persons, of whom there are not so many in Alaska. Alaska has a high rate of fatal accidents, due to the dangers inherent in the two main occupations, mining and fishing. Alaska would probably present a better health picture than is generally found in the States were it not for the prevalence of a single disease—tuberculosis. The annual death rate from all types of tuberculosis is between 350 and 400 per 100,000, as compared with forty-five in the United States. A vigorous attack on the disease over the past forty years has brought the United States rate down to its present level from 194. Something similar is required in Alaska. Tuberculosis is especially prevalent among natives, where the death rate is between 600 and 700 per 100,000. Among whites in Alaska the death rate from this disease is not much higher than in the States, but because of the communicable nature of tuberculosis, if not for humanitarian reasons alone, its high incidence among the natives should be a matter of acute concern to all Alaskans and to the nation as well. There is general agreement that an attack on the disease in Alaska should begin with provision of hospitalization facilities for the many active cases which cannot now be taken care of adequately. Several tuberculosis hospi-

tals are scheduled for construction as soon as materials and labor become available. Other diseases controlled less effectively in Alaska than in the States are pneumonia, measles, influenza, and whooping cough, though all are now under constant attack by Federal and Territorial public-health agencies.

It is in the public-assistance field that the Territory has taken its first major steps toward the assumption of the responsibilities that go with Statehood. In March, 1937, the Territorial Legislature voted to participate in the old-age-assistance program provided for in the Social Security Act. Alaska undertook to provide old-age assistance not only to white residents of the Territory previously provided for, but also to native people qualifying on the basis of standard age and residence requirements. The average monthly old-age-assistance payment in Alaska in 1941 amounted to \$29.17, in contrast to the United States average of \$21.26. In 1943 the average Alaska grant was \$30.02. Alaska does not participate in the aid-to-dependent-children and aid-to-the-blind provisions of the Social Security Act, the Territory preferring to provide assistance to white residents through its own programs, and leaving to the Office of Indian Affairs the relief of natives. A Department of Public Welfare administers the old-age-assistance program. In addition, it administers Territorial funds for white mothers' allowances for care of children in their own homes; arranges for the care of homeless, delinquent, and neglected children committed to it by the courts, and provides, through Territorial appropriation, direct relief in the form of food, shelter, clothing, fuel, medical and hospital care for needy and indigent white persons. The Territory maintains an Alaska Pioneers' Home at Sitka for aged and needy residents. This Home, with its auxiliary unit at Goddard Hot Springs, has slightly under two hundred residents, and is open, upon approval of application by the board of trustees, to any male who has been a resident of the Territory for five years, who is incapable of self-support and has no relative legally liable for support. A program of unemployment com-

pensation, similar to that in effect in the States, is maintained in Alaska and is administered by an Unemployment Compensation Commission.

Like many other frontier areas, Alaska is handicapped by living costs which are considerably higher than those prevailing nearer the sources of goods. Food, clothing, furniture, building materials, machinery, virtually everything Alaskans need in order to live and make their living, must be brought in from outside the Territory. This adds a high transportation charge to every item in the stores. Even on small articles, something—and usually something quite substantial—is added for “freight.” There are other factors tending to make living expensive in Alaska. The climate requires that construction be of a more costly type than in many sections of the States. Heating is an expensive item, as is lighting during the long dark winters. An exception as far as electricity is concerned is found at Ketchikan where the municipally owned electric power system, by offering low rates, has encouraged the highest per-capita consumption of electricity of any place under the American Flag. Clothing and footwear must be of good quality to withstand the cold and rain. Interest rates are higher than elsewhere, averaging 8 per cent. The legal rate was twelve per cent until six years ago, when it was reduced by the Legislature over the strenuous protests of the banking fraternity, who declared that ruin faced them. Because of basic high prices, a vicious circle is set up which makes all who render services in Alaska charge a little more for them than they would elsewhere, because they must be able themselves to live in a place where the cost of living is high.

The only comprehensive study of living costs in Alaska which gives a quantitative measurement of the differential between the Territory and places in the States was conducted in 1941 by the Juneau local of the National Federation of Federal Employees. Much, of course, has happened to the price structure both in Alaska and throughout the nation since that time. Recently an official study has been undertaken in Alaska, but its results are

not yet available. In the 1941 study the methods used by the Bureau of Labor Statistics in determining living costs in the States were followed as closely as possible in order to afford direct comparisons. Cost-of-living information for nine principal Alaska towns was collected on the basis of a standard annual family budget deemed sufficient to maintain a manual worker with a wife and two children. The budget listed the necessary kinds and quantities of food, clothing, housing, fuel and electricity, household goods, and miscellaneous necessities. The result of this study is the following comparison of living costs in Washington, D.C., New York City, and Seattle, as of December 15, 1940, and nine Alaska towns as of January, 1941:

| | <i>Dollars</i> | <i>Index</i> |
|-----------------------|----------------|--------------|
| Washington, D.C. | 1,491 | 100 |
| New York City | 1,511 | 102 |
| Seattle, Wash. | 1,379 | 93 |
| Ketchikan | 2,021 | 136 |
| Petersburg | 2,070 | 139 |
| Juneau | 2,228 | 149 |
| Sitka | 2,384 | 160 |
| Cordova | 2,618 | 176 |
| Seward | 2,397 | 161 |
| Anchorage | 2,816 | 189 |
| Fairbanks | 3,223 | 216 |
| Nome | 3,123 | 209 |

In this budget there is nothing for savings, nor for insurance, nor automobile, nor for travel of any kind by any member of the family. It is, in all respects, a minimum living standard. It will be noticed that the disparity between living costs in the States and in Alaska becomes progressively greater with the increasing distance from the supply bases of the Pacific Northwest, with such costs becoming more than twice as high at Anchorage, Fairbanks, and Nome as they are at Seattle.

The only part of an annual budget which can readily be less in Alaska than in the States is that classed as "miscellaneous expenses." These are almost sure to be less, because of the absence of any need for many items which are important in the States. Carfare, for example, will amount to at least \$50 per year for most families living in cities. There is no need for this in most Alaska towns. Outdoor and home recreation in Alaska is likely to take the place of commercialized amusement. There are fewer dues-collecting organizations to which a person feels he must belong. Taxes paid by persons of moderate income are very low, indeed. The result of these conditions is that expenditures in addition to the necessities of food, clothing, and shelter need not be so large as they ordinarily are in the States.

Since Alaska produces only a very small part of the food which its people consume, the question of the availability of certain perishable items is of interest to persons when they consider going to the Territory. In all of the larger towns, there is no difficulty in buying all the requirements of a well balanced diet—including fresh milk safely pasteurized, fresh vegetables, fresh meat, and eggs. Occasional shortages of certain items do occur, but these are not serious. In almost all of the smaller towns, mine and cannery locations, and in the native villages fresh milk is indeed rarely available. Fresh vegetables can be had only part of the time. Fresh meat, butter, and good cold-storage eggs are seldom missing, even in the smaller places.

There has been no rationing of food items in Alaska during the war. The OPA functions in the Territory, but only in the interest of controlling prices. An act of the Legislature prohibits the movement from Alaska to the States of items which are rationed in the States.

While not included as an essential element in the cost of subsistence, the cost of travel becomes very important to most people who live in Alaska. There is, of course, the necessity of getting to Alaska in the first place. Thereafter, for one reason or another, trips to the States are often necessary. Although such

trips normally are made by boat to Seattle and from there by railroad or highway, they are comparatively expensive. Approximate travel costs to various points in Alaska are shown in a table at the back of the book. Fares probably will be cut rather drastically after the war, under the competitive pressure of airline and, perhaps, highway transportation. However, under the conditions which have prevailed through recent years the expense of a trip from Alaska to the States and back again by one or more members of a family has certainly not been a matter for casual consideration.

Housing always has been a particularly vexing problem in Alaska. Not only are construction and heating costs high, thus leading to steep rents, but most of the time it has been exceedingly difficult for the newcomer to find a satisfactory home or apartment at any price. This is because Alaska's population has been growing fairly constantly for many years, keeping all available living quarters filled, and occupying new dwellings as quickly as they could be constructed. The shortage of housing became even more seriously acute when wartime developments swelled the population of many communities very suddenly. The problem was met in various ways—by building barrackslike quarters for single men, by banishing army, navy and construction men's families from the Territory, and by a certain amount of new construction. Even with the wartime crisis slacking off, it is still difficult in most Alaska towns to find a place to live, or even a hotel room in which to stay temporarily. Housing-construction costs in various Alaska communities in 1940 were compared by the Federal Housing Administration (against an index of 100 for Seattle) as follows:

| | |
|---|-----|
| Ketchikan, Wrangell, Petersburg | 126 |
| Juneau, Sitka | 130 |
| Skagway | 134 |
| Cordova, Valdez, Seward | 137 |
| Anchorage | 140 |
| Fairbanks, Nome | 150 |

That is, it cost thirty per cent more to build a house at Juneau at that time than it did in Seattle, forty per cent more at Anchorage, and fifty per cent more at Fairbanks. The Federal Employees cost-of-living study in 1941 reported minimum monthly rentals (including water, but not heat or furnishings) for a four-person manual worker's family as follows:

| | |
|--------------------------------|------|
| Washington, D.C. | \$29 |
| New York City | 26 |
| Seattle | 16 |
| Petersburg | 20 |
| Cordova | 25 |
| Ketchikan | 37 |
| Juneau, Anchorage, Nome | 40 |
| Sitka, Seward, Fairbanks | 50 |

New duplex dwellings recently built at Fairbanks by the Federal Public Housing Authority (and available only to the families of certain specified classes of vital personnel) rented at from \$56 to \$68 per month for four rooms, furnished. Because of the great expense of moving furniture to or within the Territory, most houses and apartments in Alaska are rented furnished.

A list of a few of the actual prices being charged for food items in various Alaska communities in December, 1944, will afford some basis for personal judgment as to the level of living costs in the Territory. Potatoes were advertised at \$5.99 per hundred pounds at Juneau, \$7.89 at Fairbanks, and \$3.95 for fifty pounds at Nome. Canned milk by the case sold for \$4.79 at Juneau and \$6.89 at Fairbanks. Butter was 55 cents at Juneau and 63 cents at Fairbanks. Eggs were advertised at 75 cents a dozen at Juneau and 85 cents at Fairbanks. Cheese was less expensive at Fairbanks (47 cents a pound) than at Juneau (60 cents). Other representative prices were: at Juneau, 50 cents a pound for codfish, 43 cents for canned meat of the "Spam" type, \$4.99 a box for apples, \$1.10 a dozen for canned baby food, and 50 cents a pound for fresh frozen

corn-on-the-cob; at Fairbanks, \$1.09 a dozen for Jello, \$5.29 for 50 pounds of cane sugar, \$5.93 for 50 pounds of onions, and 63 to 68 cents a pound for turkeys. In general, the price of staples is not too scandalously much higher than in the States, but fresh vegetables, fruit, milk, eggs, meat and similar perishables are pretty expensive.

All in all, costs are a most important factor to be considered by the person or family planning to live in Alaska. The influence of high living costs on Alaska development was stated a few years ago in a government study in the following manner:

Alaska today suffers from a vicious economic cycle:

Underpopulation over a large area leads to excessively high transportation costs.

High transportation costs result in a high cost of living.

High living costs result in high costs of production.

High costs of production and transportation make most industries unprofitable.

Lack of industrial development results in seasonal unemployment.

High living costs and seasonal unemployment discourage immigration and encourage emigration.

All of which results in underpopulation.

The breaking of this cycle seems certain, however, if we accept the first premise of current thinking about Alaska—namely, that Alaska is going to experience a very considerable increase in population immediately after the war, no matter what is done to encourage or discourage such a development. When the number of people in Alaska increases sufficiently to break the bonds of territoriality and remoteness Alaska is certain to see living costs come down and services of all kinds expand in both quantity and quality.

There are some things which new Alaskans will have to learn to put up with. Newspapers and magazines from the States arrive in Alaska from several days to several weeks late. Motion pictures, for some reason difficult to understand, are not shown until about a year behind the time of their release in the States. That these delays may be reduced or obliterated in the future is indicated by one recent innovation, delivery to Alaska of the magazine *Time* by air express, so that it is distributed on the same day as in the States.

In going to Alaska you need not give up lodges or service clubs, if you enjoy that sort of thing. All of the principal lodges have chapters in most Alaska towns of any size. Rotary and Lions Clubs have become firmly established in the North. The Chamber of Commerce, with its weekly luncheon, is a standard fixture in almost every community. In fact, all of these organizations tend to be more active and useful in Alaska than in most sections of the United States. They, and every association in which men band themselves together for progress, have a big job to do on the last frontier.

"RULES AND REGULATIONS"

ARE people allowed to go to Alaska at the present time? Is land there available for homesteading? Do service men receive any special advantages under the land laws? Is there anything to prevent settlement now along the Alaska Highway?

These questions are among those asked most frequently by persons who have been deluging government offices with inquiries about Alaska. The answer to all four is "yes"—but something needs to be said in explanation of the answer in each case.

First, about getting to the Territory. Until August of 1944, admission to Alaska was rigidly controlled by a special office set up by the Alaskan Department of the army. Due to Alaska's inclusion in an actual war zone, and because of shortages of transportation and accommodations, permits to enter were issued only to persons who could show good reason to travel to the Territory. Job-seekers and opportunity-seekers were not admitted unless they had made definite arrangements for employment. At that time, however, such restrictions were lifted, except for the portions of Alaska lying south and west of Becharof Lake, that is, the Alaska Peninsula and Aleutian Islands. For all the rest of Alaska, civilians now enjoy complete freedom of movement, with no travel permits required. To enter the prohibited area, permits are still required. In general they are issued only to persons essential to the war effort or the welfare of the civilian population, or who had previous business in the zone, or whose presence is essential to the operation or protection of property. Such permits may be obtained from Headquarters of the Alaskan Department, or by addressing: Alaska Travel Control, 1331 Third Avenue Building, Seattle 1, Wash., or from travel-control stations at Anchorage, Kodiak, Seward, or Fort Richardson. During the war, enemy aliens, persons of Japanese ancestry, and

others excluded in the interests of military security were banned entirely. Dependents of armed forces personnel are still excluded by army rule, although the courts have failed to uphold this prohibition.

To get to Alaska at the present time the only requirement is a steamship or airplane ticket and a reservation. Transportation facilities have been crowded in the past, and may be again. It is well to inquire ahead. A person planning a trip to the Territory should also arrange in advance, if possible, for hotel or other accommodations in Alaska. Usually they are hard to find.

The Alaska Highway has not been opened to general civilian traffic. Travel on that road is regulated by an Alaska Highway Traffic Control Board, with offices at Fort St. John, British Columbia. Use of the highway is restricted to those civilians whose trips are directly concerned with furthering the war effort. Bona fide prospectors desiring to explore for strategic metals may make application. Women and children are barred, because of the lack of any suitable accommodations for them along the way. In one year of operation after opening in June of 1943, the board's office issued two hundred permits and refused six hundred applications. There is a similar restriction on travel on the Canol road to Norman Wells, and even on air and water travel to that point, as no additional living accommodations are available there. Recently, the policy respecting the Alaska Highway has been that only trucks under contract to the United States Government, or vehicles equipped to supply all the needs of their occupants, including food, gasoline and spare parts, are allowed to use the road.

Filing of homestead or other claims along the Alaska Highway is impossible due to withdrawal from entry of a ten-mile-wide strip, five miles on each side of the road. A similar withdrawal prevents settlement on the Slana-Tok Cut-off. These withdrawals are temporary and will be removed at some date after the war. Under terms of Public Law 434, approved September 27, 1944, discharged veterans of World War II will be entitled

to a ninety-day-preference right of application on lands restored from withdrawals. This will give service men a very important advantage along the Alaska Highway and also in such areas as the Ladd Field Bombing Range, another withdrawal which probably will be lifted after the war. An original highway withdrawal of twenty miles on each side of the road was reduced to the present width in June of 1945. Thereafter service men were to have a 90-day head start in filing on the two 15-mile-wide strips of land thus opened up.

The same new law allows credit for service in the war toward residence requirements on certain homestead entries. A month of service in the armed forces is considered as equivalent to a month's residence on the homestead, up to a maximum of two years. As the residential year in homestead claims is only seven months, fourteen months' service in the army, navy, or marines fulfills a two-year residence requirement. Because the law contains many ifs, ands, and buts, any service man planning to take advantage of it had better communicate with the General Land Office at Washington, D.C., or Anchorage, Fairbanks, or Nome, Alaska, to learn the exact details. The Soldiers and Sailors Civil Relief Act of 1940 protects service men from forfeiture of homestead claims, but only of claims initiated before entry into the armed forces.

Vast areas of Alaska are available for homesteading. Practically all of the land in the Territory is still owned by the Federal Government, less than one per cent having passed into private ownership. Some 225,000,000 acres, or almost two-thirds of the total area of Alaska, are vacant, unappropriated and unreserved, and therefore open to homestead entry or leasing. For many years it has been the policy not to sell the fee to forest, coal lands, or oil lands, but to lease them for development purposes. Lands of agricultural character, however, may be claimed under the homestead laws.

To qualify, a person must be 21 years of age or the head of a family, a citizen of the United States or have declared intent to

become a citizen, and not be the owner of more than 160 acres of land in the United States. Homesteaders may acquire up to 160 acres of land by living on it for three years and by building a habitable house and bringing at least one-sixteenth of the area under cultivation within two years, and a total of one-eighth by the end of the third year. After fourteen months of residence on the land the homesteader may, if he chooses, commute his entry by paying \$1.25 per acre, and thus obtain immediate patent. No charge is made if he remains three years and fulfills the other requirements. In National Forests the regulations are the same except that the land to be homesteaded must have been classified as agricultural in character, and declared open for settlement. No commutation through payment is permitted on this land; residence of three years is required. Homestead entries in Alaska totaled 111 in 1940, 117 in 1941, 104 in 1942, 79 in 1943 and 62 in the first half of 1944.

The General Land Office, which controls the coal and oil leases, also leases lands on the public domain suitable for fur farms, for grazing livestock, for timber, and for certain water-power developments. It issues patents on lands desired for homesteads, home sites, industrial sites, town sites, and various other types of occupancy, and for mining purposes, exclusive of coal and oil. Alaska is divided into three land districts. A local land office is maintained at Anchorage to care for the land interests of Southeast and southwestern Alaska, at Nome for the Seward Peninsula area, and at Fairbanks for the interior region.

To enable fishermen, trappers, traders, manufacturers, or others engaged in productive industry in Alaska to purchase small tracts of unreserved land as homesteads or headquarters, a special law provides that any citizen of the United States 21 years of age, whose employer is engaged in trade, manufacturing or other productive industry in Alaska, or who is himself engaged in such business, may purchase one claim, not exceeding five acres, of non-mineral, unreserved land in the Territory at \$2.50 per acre, but for not less than a minimum of \$10. An ap-

plicant for such tract is required to pay the cost of the survey. Application should be made to the District Land Office, unless the acreage desired is within a National Forest, in which case application should be made to the Regional Forester at Juneau. Under another law, without any showing as to his employment or business, a citizen may purchase the same amount of land on the same terms after occupying it as a homestead or headquarters, in a habitable house, not less than five months each year for three years. In this case, the tract will be surveyed without cost to the applicant.

The acquisition of title to lands to be used for industrial enterprises, such as canneries, sawmills, fur farms, etc., is an important factor in commercial development. Any citizen of the United States 21 years of age or any corporation desiring to occupy public lands in Alaska in good faith for any industrial purpose, may, after occupancy and erection of the improvement, purchase one claim not exceeding eighty acres at \$2.50 per acre. This land may be purchased without a period of residence on the claim. Such sites may not occupy more than eighty rods of shore space along navigable waters. Under existing regulations the applicant for a trade and manufacturing site, if his claim is on unsurveyed land, is required to bear the cost of the survey. In all other cases, excepting mining claims and mill sites, where the government sells the land, the survey is made without cost to the applicant.

Mainland areas not exceeding 640 acres and islands not exceeding thirty square miles in extent of the public domain may be leased by corporations and individuals for fur-farming purposes under regulations of the General Land Office. A minimum rental based on acreage is charged, with an excess royalty on gross returns of sales. Within National Forests, regulations issued by the Forest Service provide for leasing mainland tracts of eighty acres or less, and for islands up to a thousand acres in extent. Rental rates vary slightly from those on the public domain.

To permit the grazing of livestock on the public domain in

Alaska, the Secretary of the Interior is authorized to create grazing districts upon public lands outside of the Aleutian Islands Reservation, the National Forests and other reservations administered by the Secretary of Agriculture, and outside of National Parks and Monuments. Leases may be issued for terms of not exceeding twenty years. Fees are fixed on the basis of the area leased or on the basis of the number and kind of stock permitted to be grazed. Any person, including prospectors and miners, may graze, free of charge, not more than ten animals upon any land included within any grazing district.

Provisions for the purchase of timber on National Forest land were discussed in the section on the forest industries. Sales of timber on public lands outside the National Forests and other reservations are arranged through the District Land Offices. Minimum prices at which such timber may be appraised or sold are: Sitka spruce, hemlock, and red cedar, \$1 per thousand feet, board measure; yellow cedar, \$2.50 per thousand feet; piling, $\frac{1}{2}$ to 1 cent per linear foot, depending on length and diameter; shingle bolts and cooperage stock, 50 cents per cord; wood suitable only for fuel or mine lagging, 25 cents per cord. Individual miners and prospectors, farmers, and other residents of Alaska may obtain permits for free use of timber, to be used in connection with mining and prospecting activities or for firewood, fencing, buildings, and other domestic purposes; providing the applicant does not have an adequate supply of timber on his own lands.

The Federal Water Power Act provides for the development and use of water-power sites under a form of license calling for an annual rental fee per developed horsepower, and covering a period not in excess of fifty years. Licenses are renewable under certain conditions at the end of the period for which granted. Inquiries and applications should be addressed to the Regional Forester, United States Forest Service, Juneau, Alaska, who has been designated the Alaska representative of the Federal Power Commission.

Although on the public domain there is reserved for public purposes "all tracts of land in Alaska upon which hot springs, or other springs, the waters of which possess curative properties, are located, to the extent of 160 acres surrounding each spring," this order does not apply to land within National Forests. Provision has been made there for the leasing of lands near or adjacent to mineral, medicinal, or other springs for terms of not more than twenty years, for the erection of bath houses, hotels, or other improvements for the accommodation of the public.

Deposits of minerals in the public lands of Alaska are subject to location and purchase under the general mining laws of the United States by citizens, or those who have declared their intention to become citizens; and prices are fixed at \$2.50 per acre for placer-mining claims and at \$5 per acre for lode-mining claims. Each lode-mining claim is limited in area to a tract not exceeding 1,500 feet in length by 600 feet in width, but the law imposes no limit as to the number of locations which may be made by a single individual or corporation. A placer-mining location in Alaska may not exceed twenty acres in area for an individual location, or forty acres for an association of two or more persons (both subject to certain restrictions as to length and breadth), and no person is permitted to locate for himself more than two placer-mining claims in any one calendar month. During each year (beginning on July 1 succeeding the location of the claim) and until patent has been issued, at least \$100 worth of labor or improvements must be expended in development of each lode-mining claim, and an affidavit must be filed with the recorder of the district where the claim is located, attesting the performance of assessment work.

As has been mentioned, oil and gas lands may not be patented in Alaska. The development of such deposits in public lands is governed through the issuance of prospecting permits and mining leases. A person or corporation is authorized to hold oil and gas permits and leases for not more than 2,560 acres in the same geologic structure, and not more than five permits and leases in

the Territory, except that for development purposes in any non-producing structure the number of permits and leases which may be held by assignment may be increased if such action appears to be in the public interest. Rental and royalty are specified by the Department of the Interior, subject to readjustment at the end of each twenty-year period.

In 1942, all potential oil fields were withdrawn from entry, as a war-prosecution measure. This included 48,800,000 acres in Northern Alaska, 15,600,000 acres on the Alaska Peninsula, and 3,040,000 acres in the Katalla-Yakataga field. The same mineral-leasing act also authorizes the issuance of prospecting permits for sodium, and leases of sodium, phosphate, and oil-shale deposits. Similar provisions are made with regard to potash.

By an act of 1914, known as the "Alaska coal-leasing law," the Secretary of the Interior is authorized to survey the public lands in Alaska known to be valuable for their deposits of coal, and to divide the unreserved coal lands into leasing blocks or tracts of forty acres each, or multiples thereof not exceeding 2,560 acres in any block, and to offer such blocks for lease. Under the provisions of this act the known coal lands in the Matanuska (thirteen townships), Bering River (eight townships), Nenana, and Cook Inlet coal fields have been surveyed, certain areas have been reserved for the government and the remaining lands have been divided into leasing blocks or tracts. This coal land is open to application for lease by any citizen, association, corporation, or municipality, or any State or Territory. None of the other coal lands in the Territory have been divided into leasing blocks or tracts, and, until this is done, leases there are not authorized by law. A coal lease may be for a period of not more than fifty years, subject to renewal. The lessee covenants to invest, in actual mining operations upon the land, not less than \$100 for each acre involved, of which amount not less than one-fifth must be expended during the first year of the lease and a like sum in each of the next succeeding four years. Royalties are specified in the lease. No person, association, or corporation is

permitted to hold any interest as a stockholder, or otherwise, in more than one lease.

Coal-prospecting permits may be issued to include not more than 2,560 acres, to applicants qualified to hold coal leases, where exploratory work is necessary to determine the existence or workability of coal deposits in an unclaimed, undeveloped area. In order to provide for the supply of strictly local and domestic needs, limited licenses or permits may be issued, granting the right to prospect for, to mine, and to dispose of coal from unreserved public lands, on specified tracts not exceeding ten acres for periods of two years without payment of royalty for the coal mined or for the land occupied. Outcroppings of coal sufficient for local domestic needs are widely distributed over the Territory, and small amounts are mined for local use in many places.

THE ALASKA COUNTRY MILE BY MILE

ONE of the many things geographers can't seem to agree on is the answer to the question: Into how many regions should Alaska be divided? Some say three, and others five, six, or seven. Alaska as a whole has a certain regionality about it and, as we have seen, forms in another sense only part of a larger North Pacific region. But these units are too large for our purpose of trying to become acquainted with the country and its opportunities. Let us, then, consider about twenty different localities, which, strictly speaking, are not regions at all but something we might call "transportation provinces," because they are given separate identity by the means which exist for getting to and moving about within them.

Southeast Alaska

The part of the Territory lying closest to the Pacific Northwest has a distinctive character of its own and is unlike any other section of Alaska. So distinct is it that whenever the question of Statehood is mentioned someone may be counted upon to come forward with the suggestion that Alaska should form not one State but two—Alaska proper, and Southeast Alaska. Notice that the name by which Alaskans know this part of the Territory is Southeast—and not the vaguer term Southeastern—Alaska. It amounts to a proper name in the same sense as do "North Carolina" and "West Virginia," and is meant to be much more than merely descriptive. Because it contains the capital, Juneau, and about one-third of the people of Alaska, Southeast Alaska wields considerable influence in Territorial affairs. It has been described as the tail that wags the dog. Residents of the interior tend to resent the fact that the Panhandle is part of Alaska. The story is told of a sourdough returning to the creeks after his first

visit "Outside" in many years and describing to his cronies, naturally in somewhat uncomplimentary terms, the hustle and bustle of civilization, the heavy traffic, the noise, the crush of people. When he is asked, at length, how far he traveled, his reply is, "All the way to Juneau."

While small in comparison with the rest of the Territory, Southeast Alaska has fairly respectable dimensions. It is about 380 miles long and 120 wide, with a land area of 35,527 square miles. This is a little larger than the combined areas of New Hampshire, Vermont, Massachusetts, Rhode Island, and Connecticut. Much of the charm of Southeast Alaska, as well as its economic worth, is due to the generous intermingling of two ingredients not often found associated so closely together—high mountains and the sea. The traditional American argument about where to spend the family vacation could be settled with an entirely satisfactory compromise in this part of the world. The mountains are snow-covered and spectacular, and sparkling salt-water channels of the Pacific invade their sunken valleys. More than half of the area of Southeast Alaska consists of islands which the sea has separated from the mainland. The narrow mainland strip comprises only the steep Pacific slope west of the summit of the Coast Range, which marks the Alaska-British Columbia boundary. When the heights of some of the peaks in this range—ten and fifteen thousand feet—are read in conjunction with their distance from the sea, fifteen to twenty miles, the steep and rugged character of this coast may be appreciated. There is almost no level land in Southeast Alaska, except in the few narrow valleys which are elevated sufficiently to escape being turned into fiords through inundation by the sea. The "shore" along most of this coast consists simply of the point at which the mountainside disappears under water. The sharply indented coastline provides numerous deep and protected harbors where even large steamers can land their cargoes.

The system of large and small islands making up most of Southeast Alaska is called the Alexander Archipelago. It would be

difficult to say just how many islands there are—thousands, certainly. The most important of the larger islands are Baranof (1,607 square miles), Admiralty (1,664), Chichagof (2,104), Prince of Wales (2,231), and Revillagigedo (1,120). As they amount to the foothills of the Coast Range, the islands for the most part are not quite so steep as the mainland, although most of them have very impressive mountain ranges at their centers. Ketchikan is located on Revillagigedo, which although hard to pronounce is an attractive island. It was named by its Spanish discoverer after the Count of Revilla and Gígido, who was Viceroy of Mexico and sponsor of the exploring expedition. This is one of the few Spanish names to stick in this part of the world. Most of the islands have Russian names, although Admiralty, Douglas, and Prince of Wales are reminders of the early British voyages of discovery in these waters. Sitka is on Baranof Island, Petersburg on Mitkof, and Wrangell on Wrangell. None of the other islands supports settlements amounting to much more than Indian villages. Hyder, Juneau, Skagway, and Haines are the only towns of any size on the mainland.

Southeast Alaska's one highway connection with the outside world, via Haines and the Alaska Highway, has already been mentioned. The Haines Cut-off is 159 miles long and at present is not a very good road, but it is a good route. The junction with the Alaska Highway occurs in southwestern Yukon Territory, about 108 miles west of Whitehorse on the way to Kluane Lake. From that point the traveler can go either northwest toward Interior Alaska or southeast toward the States. Before many years, Skagway probably will push its local road system to connect with this outlet. Juneau hopes ultimately for an overland connection with Skagway along the shore of Lynn Canal, although the route poses all but insuperable engineering difficulties.

None of the other existing towns of the Panhandle has a good chance of ever being tied into a highway system. In the first place, they are located, not on the mainland, but on islands separated from it by broad sea channels. For another thing, na-

ture has erected at the ocean shore for the entire length of Southeast Alaska a high mountain barrier, indented at a hundred points by an intricate network of fiords. The fiords prevent the building of highways along the coast, while the mountains block access to the interior. If roads could with great difficulty be built in the Stikine or Taku valleys, ferry connections still would be necessary in order to reach any of the towns mentioned and, at best, such roads would be open for use only a few months in the summer, as there is extremely heavy snowfall in the Coast Range. Present and future residents of Southeast Alaska would do well to reconcile themselves to transportation by means of the steamship and airplane and, quite possibly, an automobile ferry which will connect all the towns of the region with the continental road network through Prince Rupert on the south, and the Alaska Highway system through Haines on the north.

This section also has a single railroad, one which has received some rather notorious publicity, springing from the extremely difficult operating conditions which prevailed while it was being used as a means of supply in the construction of the Alaska Highway. This is the narrow-gage White Pass and Yukon Route, which connects Skagway with Whitehorse, a distance of 111 miles, of which twenty are in Alaska. A British-owned line, this railroad was operated for a time by the United States Army. The only large river cutting through the Coast Range in a way to give Southeast Alaska an entry to the interior is the Stikine. This is navigable 160 miles by steamboat to Telegraph Creek, British Columbia. The Taku is navigated a short distance beyond the British Columbia border.

Except for the upper mountain levels, all of Southeast Alaska is heavily forested, principally by the western hemlock and Sitka spruce. The latter grows as tall as two hundred feet, and as big around as fourteen. Timber line varies from about thirty-five hundred feet on the outer islands where the climate is mildest to less than a thousand feet at Skagway. Around the base of the big trees springs a tangled undergrowth of bushes, vines, and the

prickly devil's-club, while underlying and overlying everything is a solid carpeting of moss, ferns, and lichens, which holds water like a sponge. Because of the tropical moisture with which the plants, the ground, and even the air are always heavily laden, forest fires are unknown in this part of Alaska. Nothing decays, nothing rots, and several centuries' accumulation of fallen trunks and branches crisscross on the ground. Even on the level stretches, overland travel, off the thousand miles of trails which have been provided in this area, is exceedingly difficult. The way to get around Southeast Alaska is by small boat, not on foot.

Southeast Alaska is notably a glacier country, with dozens of very large rivers of ice so located that even the casual visitor cannot miss seeing them. Glaciers in the locality range from half a mile to four miles in width. At the very northwestern extremity of Southeast Alaska, as described here, is a unique region which consists of Glacier Bay and its surrounding ice fields and mountains. The bay itself is a great fiord extending inland some sixty miles from Icy Strait. Into it on every side, from the frowning mountains, flow large and beautiful glaciers. On the basis of measurements taken by a scientific expedition, it is estimated that Muir Glacier in this group is discharging ice at the rate of 150,000,000 cubic feet a day. Most of these glaciers are receding, some of them quite rapidly, so that the character of the area is gradually changing. Ships now may navigate many miles farther into the Bay than they could when it was explored by Vancouver in 1794. The face of one glacier at the head of the Bay has retreated so far, in fact, that the salt water of the fiord advanced inland past the Alaska-British Columbia border a few years ago, giving Canada a very short "seacoast" in this area and technically cutting Southeast Alaska off from any land connection with the rest of the Territory. A little more than two million acres surrounding Glacier Bay has been reserved as a National Monument, one which because of its beauty and accessibility from regularly traveled steamship routes is certain to become an outstanding tourist attraction if the Department of the Interior can

persuade Congress to supply funds for its development, which in the past nineteen years it has been unable to do. At the present time few people visit this area.

The economic activity of Southeast Alaska is based predominantly on fishing, with gold mining, government, the forest industries, fur farming, and tourists also of considerable importance. Even more than in the rest of Alaska, the population of Southeast Alaska is urban. Life centers around the half dozen large towns and the many Indian villages. Very few people live out in the country. Outdoor recreation activities for town dwellers are unexcelled. Hiking, boating, fishing, and hunting are the main diversions for leisure hours. The resident of this section does not require a weekend, or even a whole day, to get out into the wilderness, which is always waiting at the edge of town. More than two-thirds of the total area of Southeast Alaska is contained in the boundaries of the Tongass National Forest, the largest one anywhere under United States Forest Service jurisdiction. This land is not "locked up" but is available for any reasonable use, under terms prescribed by the Secretary of Agriculture.

Ketchikan is the "First City" of Alaska by virtue of its location almost at the southeastern corner of the Territory, 750 miles northwest of Seattle, as the steamship plies. It lives on fishing, and its Chamber of Commerce will tell you that more canned salmon is packed in Ketchikan's ten canneries than in any other town in the world. The city also has a modern sawmill, a large Coast Guard base, several cold storage plants, and a small marine ways. Ketchikan Creek, which flows through the center of town, is of considerable interest to visitors, particularly in the autumn when the salmon hurdle up-stream to spawn. Public utilities in Ketchikan are publicly owned, and the electric-power rate is the lowest in Alaska, while per capita home use of electricity is the highest anywhere under the American Flag. Tongass Highway, a good gravel-surfaced road, extends for twenty-three miles north and south of town, providing access to some very attractive pub-

lic recreation areas and to the typical Indian village of Saxman. Ketchikan is famous in Alaska for its progressive "town spirit."

Wrangell, next to Sitka the oldest town in Southeast Alaska, is the gateway to the Stikine River. Situated about a hundred miles north of Ketchikan, on a good land-locked harbor, Wrangell has a few small fishery and sawmill enterprises. Located on the short Wrangell Highway is Wrangell Institute, a large boarding school operated by the Office of Indian Affairs. A fine group of totem poles and other Indian relics may be seen at Wrangell.

Petersburg differs from most towns of Southeast Alaska in that it has no Indian village located in its environs. The population consists principally of fishermen of Scandinavian descent. The town has a large cold-storage plant and a salmon and crab cannery. Its busy shrimp cannery was destroyed by fire recently. Petersburg is the fur-farming center of Southeast Alaska, with about sixty such establishments located in near-by island and mainland areas. Here also is the experimental fur farm of the University of Alaska. Petersburg, half way between Ketchikan and Juneau, is situated at the north end of Wrangell Narrows, a famous portion of the Inside Passage twenty-one miles long and in places not much more than a hundred yards wide. Mitkof Highway leads along the Narrows for eleven miles.

Juneau, a thousand miles northwest of Seattle, was the largest city in Alaska at the time of the 1940 census, but probably has been surpassed since that time by Anchorage, if not by Fairbanks as well. It remains the most metropolitan and cosmopolitan of Alaska cities, having the atmosphere and activity of a place about ten times its size in the States. As the Capital, it is the headquarters of all the Territorial, and almost all the Federal, government agencies which operate in Alaska. Its principal industry is the famous Alaska Juneau gold mine, which is not operating at the time of this writing. The city has a large cold-storage plant and a sawmill, and serves an important function as trading and service center for a large hinterland of mining, fishing and fur-farming country. Among the attractions of Juneau are the Ter-

ritorial Museum, a city park located in a natural amphitheater and an eye-filling surrounding region of mountains, glaciers, and lakes. Glacier Highway, running north out of Juneau, is twenty-nine miles long, but with its various loops, extensions, and connections it provides about eighty miles of road on which the motorist in this vicinity may drive.

Douglas is located across Gastineau Channel from Juneau, with which it is connected by highway and bridge. Douglas is the site of the famous Treadwell mine, which produced \$66,000,000 in gold before a cave-in forced its abandonment in 1917. A small salmon cannery is located there. It is also rather notoriously the scene of Juneau's later night life, and the proposal "Let's go to Douglas" can be heard on the still night air at locking-up time in front of almost any Juneau cabaret.

Haines is beautifully situated at the sea end of the road gateway from Southeast Alaska to Interior Alaska. The small army post of Chilkoot Barracks, which was the only military establishment in Alaska as late as 1940, is located here. In the near-by Chilkoot Valley is a region of some agricultural promise which is locally famous for its fine strawberries.

Skagway is at the head of Lynn Canal, 1,100 miles northwest of Seattle. It has long served as the rail gateway to northern British Columbia and the Yukon Territory, a function which it inherited from Gold Rush days when many thousands of fortune seekers passed this way by more primitive means of transportation. Early in the war, the burgeoning defense activity in the Whitehorse vicinity with which Skagway is connected brought to it something of a boom. More recently, the town has resumed its normal level of activities.

Sitka lies about one hundred miles west of the main water route through Southeast Alaska, but is served regularly by steamer from Seattle as well as by smaller craft from Juneau. This picturesque port was long Alaska's capital, under both Russian and United States regimes. Many evidences of the Russian occupation remain, including the old Russian church in the center

of town. Sitka has a salmon cannery and sawmill, and experienced its greatest economic lift when an important naval base was established there in 1940. Sitka National Monument, with a tree-shaded Lovers' Lane and an unusually fine array of totem poles, is located at the edge of town. Sheldon Jackson School, conducted for natives as a mission activity, is another attraction. Sitka's setting on an island-sprinkled bay in Sitka Sound, facing the open Pacific, is unique. Mount Edgecumbe, a volcanic cone with the classic lines of Fujiyama, is a conspicuous feature of the land- and seascape viewed from the town.

Of the smaller towns of Southeast Alaska, *Hyder* deserves mention as the United States center of the Portland Canal mining district, in which the principal development to date has been at Stewart, across the Canal in British Columbia. *Craig* is the principal town of the west coast of Prince of Wales Island, located 110 miles by water from Ketchikan. It is a trading, fishing, and logging center, about half of whose people are Indians. *Klawock* and *Hydaburg*, located in the same vicinity, are among the larger Indian villages of Southeast Alaska. Other such villages are *Hoonah*, *Kake*, *Angegnah* and *Tenakee*. Hoonah suffered a disastrous fire, in 1944. *Port Alexander* is a troller's town located at the southern tip of Baranof Island. Its permanent population of forty is expanded ten-fold each year during the period when the big salmon are running off Cape Ommaney. The prosperous village of *Metlakatla*, peopled exclusively by Tsimpsian Indians, is located on Annette Island about fifteen miles south of Ketchikan. With its clean town site, its municipally owned salmon cannery and fish traps which contribute importantly to its success, with its cooperative sawmill and retail store, Metlakatla is an example of the progress which can be made under favorable circumstances by the primitive people of Alaska. Two small Southeast Alaska settlements of recent promise are *Gustavus* (also known as Strawberry Point) and *Pelican City*. The former, located at the head of Icy Strait, west of Juneau, is perhaps the outstanding agricultural locality of this part of Alaska, and is

also the site of a large airfield development. Inclusion of all the surrounding countryside in the enlarged boundaries of Glacier Bay National Monument halted further farm ventures. Pelican City, located on Lisianski Inlet, 125 miles west of Juneau, is an integrated fishing port, with a salmon cannery, cold-storage and freezing establishment, and facilities to service fishing craft.

Gulf of Alaska

Between Cape Spencer, west of Juneau, and the mouth of the Copper River, below Cordova, curves 335 miles of open sea-coast exposed to the Gulf of Alaska. This area may be likened to Southeast Alaska without the protecting islands of the Alexander Archipelago. The result is quite different. The North Pacific is swept against the shore by prevailing west and southwest winds which have had five thousand miles of open ocean in which to gather their fury. Pent in by the rocky headlands of the coast, the sea is not able to move in any direction except vertically. This it does, in chops, swells, and miscellaneous indescribable but very effective maneuvers which make the Gulf of Alaska a mean piece of water and a voyage across it a memorable experience. It is said that the scenic panorama furnished from the Gulf by the St. Elias range of mountains is a very grand sight to behold, but few sea travelers are able to hold their heads up long enough to see it. However, the story that the Gulf heaves so violently as to leave large portions of the ocean floor exposed in the trough of the swells is probably an exaggeration. Those shattering bumps you feel against the ship are not land but water.

Administratively, the strip of Alaska facing on the Gulf is split at the 141st meridian between the First Judicial Division (headquarters, Juneau) and the Third (headquarters, Anchorage). Geographically and economically, it is a sort of no man's land. The forbidding coast is broken importantly only by Yakutat Bay, about in the middle of the crescent. Smaller but interesting indentations occur at Lituya Bay, farther south, Icy Bay, farther west, and Controller Bay, near the mouth of the Copper River.

Yakutat (see below) is the only port, and even there the strongest ships do not attempt an entrance in bad weather or poor visibility. The St. Elias range rises majestically from the coast itself, its more important peaks being Fairweather, 15,300 feet; Hubbard, 14,986; Vancouver, 15,720, and St. Elias, 18,008; while a few miles across the border in Yukon Territory the range culminates in the grand height of Mount Logan whose 19,850-foot summit is second on this continent only to Mount McKinley, which tops it by 450 feet. Malaspina, a very large glacier of the fan-shaped Piedmont type, fronts on eighty miles of coast just north and west of Yakutat. This one glacier covers about 1,500 square miles, an area one-fourth larger than the State of Rhode Island.

Steamship service is furnished to Yakutat by an occasional one of the ships plying to "the Westward" from Seattle and the Inside Passage. Small vessels do not have much to do with this part of the coast. Airplanes flying between Southeast and South-Central Alaska usually land at Yakutat, which has a good air field. Specifically, the route flown, with stops en route, is Juneau-Yakutat-Cordova-Anchorage. This section of coast has no roads, but a nineteen-mile railroad, the Yakutat Southern, runs between Yakutat and the fishing locations of Situk River and Lost River.

Lituya Bay, about sixty miles northwest of Cape Spencer, was first visited by the French explorer La Pérouse in 1786. The tides move through the constricted entrance to this bay so rapidly that it can be navigated only at slack tide and in calm weather. Inside, a land-locked seaway of superlative beauty leads back to the sheer base of the Fairweather Range. Cenotaph Island rises in the center of the bay. No one lives there at the present time, and only a very few people have ever visited the area. It is possible to fly there from Juneau in a pontoon-equipped plane. Icy Bay, which its name describes, indents the coast northwest of Yakutat, where a part of the vast face of Malaspina Glacier reaches salt water. The bay is frequented from time to time by a few seal

hunters, but for the most part its spectacular beauty goes unseen.

Like Southeast Alaska, the Gulf coast is forested wherever the terrain permits. Almost all of the area except some of the ice fields is contained in one or more of four national reserves: on the south, Glacier Bay National Monument; between the Monument border and Yakutat Bay, Tongass National Forest; between Mount St. Elias and the Copper River, the newly created Katalla-Yakataga oil reserve, whose western edge overlaps a corner of Chugach National Forest.

Yakutat is an Indian village whose principal economic pursuit is fishing. A salmon cannery is located there. The Yakutat Southern Railway operates in connection with fishing and canning activities. Trapping is the only other activity worthy of mention. The very small settlements of *Yakataga* and *Katalla* may become of considerable importance if hopes which are held for the development of an oil field in this vicinity prove justified. A small well at Katalla actually produced oil for many years, following government exploration of the field there in 1907. Thus far, this is Alaska's only producing well. Seepages have been observed also at Yakataga, sixty miles to the east. The Bering River coal field, with high-grade coals not at present utilized, lies in this area, and coal deposits have been reported at various other places between the Copper River and Yakutat. What else of value may be contained in this area is largely unknown.

The Westward

This is the name bestowed rather loosely on all the extensive Pacific slope of Alaska lying between Cape St. Elias and the Aleutian Islands. Its cultural center is Anchorage. This large and varied region will be described here under the separate headings of Prince William Sound, the Railroad Belt, Kenai Peninsula, Matanuska and Susitna valleys, Cook Inlet, Kodiak and Afognak islands, the Alaska Peninsula, and the Aleutian Islands.

Prince William Sound

Prince William Sound bears considerable resemblance to Southeast Alaska. In the first place, the country "looks" like that of the Panhandle. A group of islands screening the entrance to the Sound furnishes protection to the varied island and mainland areas within, and makes it possible for small boats to move between the various settlements of the region. The Sound is surrounded by majestic mountains and glaciers. The forest cover along the coast is coniferous and dense. Fishing and mining are the principal economic pursuits of the residents of the area. Several towns, of fair size as towns go in Alaska, have grown up on the shore. Practically the entire area is embraced in the boundaries of a national forest. These resemblances to Southeast Alaska are more than superficial. There are two points of difference, however, which give Prince William Sound an outlook all its own. To the Sound's disadvantage, it has nothing resembling the Inside Passage to furnish quick and ready communication with the outside world. Sea transportation lines to the States lie across the Gulf of Alaska. But Prince William Sound possesses an important advantage not enjoyed by Southeast Alaska—good routes of access to the interior. This makes of the Sound area more than a coastal strip and gives it a hinterland extending many miles back from the shore.

Prince William Sound itself is a body of salt water almost a hundred miles broad, lying at the apex of the triangle formed by the North Pacific shore as it slants northeastward from the Aleutians and northwestward from the States. Steamers from Seattle call here regularly and find in the deep waters of the Sound safe and good harbors. Several large, active glaciers, notably Columbia Glacier near Valdez and those in the long fiords on the western side of the Sound, discharge icebergs into salt water.

Under marine influence, spruce and hemlock grow along the shore, though the trees are not quite so large nor so closely spaced

as in Southeast Alaska. Timber line ranges from about 1,200 to 1,500 feet. The Chugach National Forest, which includes almost the entire shoreline of Prince William Sound, covers the extreme northern limits of the Western hemlock-Sitka spruce forest type on this continent. Further inland these species give way to deciduous forests of birch, alder, and cottonwood.

The Copper River Flats, although not geographically a part of Prince William Sound, are included with it in this discussion because they are economically tributary to the Sound city of Cordova. The flats are about forty miles wide and their braided channels constitute one of the famous fishing grounds of Alaska. Up the Copper River run great numbers of salmon, including the valuable red salmon. Here too are the only beaches in Alaska that provide the prized razor clam. The Copper River Flats also form one of the best duck-hunting locations in the Territory, one which annually attracts sportsmen even from far removed sections of Alaska.

Up the Copper River from Cordova ran for many years the Copper River and Northwestern Railroad, which was abandoned in 1938 when the Kennecott Copper Corporation's mine at Kennecott, which the railroad was built to serve, was worked out. This 113-mile line tapped a remarkable scenic area. The right-of-way has been donated by the corporation to the Federal Government, which has had under consideration various proposals to use sections of the grade for roads. The first portion of the railroad route, leading out of Cordova, across the Copper River Flats and along the lower Copper River Valley, probably is beyond resurrection, owing to removal of the rail and the disappearance of trestles and bridges, but the railroad grade is reached again at Chitina, farther inland, by a spur from the Richardson Highway.

From the town of Valdez at the head of Port Valdez, the northernmost fiord of Prince William Sound, and the most northerly port in Alaska to be free from ice all the year, the Richardson Highway leads inland 368 miles to Fairbanks. This route, whose

utility has been greatly increased through connections provided by the new Alaska and Glenn highways, is closed from about October 15 to June 15 by the very heavy snowfall in passes lying a short distance inland from the coast. Airplane service from Anchorage is furnished to both Cordova and Valdez throughout the year.

Cordova, which lost its chief economic prop with the closing of the copper mine and railroad, has managed to remain a prosperous town by capitalizing on its position as center for the extensive and varied Prince William Sound fishing industry. Its fourteen canneries, which include those processing salmon, crab, clam, and shrimp, produce a pack valued at between one and two million dollars a year. Eleven additional canneries and reduction plants, as well as nine mining camps, seven logging camps, a lumber mill and a dozen fur farms, are located within the Cordova trading area. Recently plans were announced for building a new \$500,000 cannery there to replace one destroyed by fire.

Valdez derives its main support from its function as a transshipping point between the steamships, 1,600 miles out of Seattle, and the trucks and buses which operate on the Richardson Highway during the summer. Many small mines, as well as fur-farming and fishing enterprises, are located within the Valdez trading area. Until a few years ago this was also the Court headquarters for the Third Judicial Division, a distinction (and community asset) which was lost to Anchorage several years ago after fire destroyed the Valdez courthouse.

Across the Sound from Cordova and Valdez is located the new Alaska Railroad terminus *Whittier*, which is certain to become a busy port and an important entry to Interior Alaska. Whittier is hemmed in by mountain and glacier to a narrow strip of the shore of Passage Canal. Directly back of the town the new railroad route leads through two tunnels, one of them 13,090 feet long, to the head of Turnagain Arm, where it connects with the old line of the Alaska Railroad into Anchorage. The Whit-

tier terminus has been in use only about a year, and development of a town there has been discouraged until after the war. A town site has been surveyed by the General Land Office, and lots will be offered for sale when conditions are suitable for building.

The smaller settlements of Prince William Sound include *Latouche*, *Chanega*, *Tatitlek* and *Eyak*, all of which have more Indian than white inhabitants.

The Railroad Belt

The most important transportation link between the Alaska coast and the interior is furnished by the Alaska Railroad, which was constructed between 1915 and 1923 and on which the Federal Government has spent something like \$75,000,000 in excess of revenues. The main line extends from Seward to Fairbanks, a distance of 470 miles. Recently the additional terminus at Whittier was provided. The line north of Seward contains what is known as the Loop District, a section of mountain grade where to gain altitude in crossing the Kenai Mountains the line makes use of a number of long wooden trestles to circle wide and cross over its own tracks at a higher elevation. It was the vulnerability of this section to possible enemy interference which prompted the opening of the new terminal at Whittier. It has been announced as government policy to maintain both the Seward and Whittier lines. Several short branch lines tap the Matanuska and Nenana coal fields.

The railroad ties together such diverse natural areas as the Kenai Peninsula, Prince William Sound, Cook Inlet, the Matanuska and Susitna valleys, the Alaska Range and the Tanana Valley. Some of these will be discussed separately later on. Here only the localities which do not belong quite definitely to one of these other regions will be described.

Anchorage, located on Knik Arm, an extension of Cook Inlet, is the headquarters of the Alaska Railroad, sixty-two miles from Whittier. Laid out on a level town site in the traditional grid pattern, it was until the advent of such recent communities as

Whittier and Pelican City the only "planned" town in Alaska. From the standpoint of development possibilities, Anchorage appears to have everything—an excellent location, good transportation facilities, a pleasant climate, mines, farms, fisheries, and a large military establishment. As the growth of Anchorage in its early history was closely associated with the development of the Alaska Railroad, so its future seems to be assured by the diverse transportation systems which radiate from the city. First, there is the railroad, which is the town's principal "industry" and which will be of growing importance as the Railroad Belt develops. Then, the local commercial air field is the busiest in the Territory, with a number of airlines serving the Kenai Peninsula, Cook Inlet points, Alaska Peninsula, Bristol Bay, and Kuskokwim River, Fairbanks, and Prince William Sound, not to mention the more immediate area which is tributary to Anchorage itself. Finally, the new Glenn Highway provides an overland link with Valdez, Fairbanks, and all Alaska Highway points. The Willow Creek mining district is an important lode-gold area within the Anchorage trade area. The Matanuska Valley agricultural area and the Matanuska coal fields also are near by. The town itself provides all the comforts of American urban life, including hospitals, schools, hotels, a new Federal Building, the railroad headquarters, apartments and stores. Two salmon canneries and several fox and mink farms are located close at hand. More and more, Anchorage is becoming an important governmental center. Several Federal agencies have their Alaska headquarters here in preference to Juneau. The population in the spring of 1945 was estimated at 7,050, with 5,250 in the corporate area.

Smaller settlements in the Anchorage vicinity include *Ek-lutna*, twenty-six miles northeast by railroad and highway, where is situated a vocational school of the Alaska Native Service, soon to be moved to quarters vacated by the army recently at Seward; the farming centers of *Matanuska*, *Palmer* and *Wasilla*, and the coal mining towns of *Eska*, *Sutton* and *Jonesville*. Along the rail-

road as it heads northward are the stations of *Talkeetna*, *Curry*, *Cantwell*, *McKinley Park*, and *Healy*, while the coal-mining site of *Suntrana* lies on a branch five miles off the main line. The line crosses the great Alaska Range at the surprisingly low altitude of 2,200 feet in Broad Pass. *Nenana*, on the Tanana River, is the trans-shipment point for the large steamboats which ply the Tanana and Yukon rivers. From *Nenana*, the railroad turns northeastward toward its inland terminus of Fairbanks.

The Alaska Railroad and its management are the object of much caustic comment throughout the Westward and Interior, due to the fact that the rates of the line, by comparison with rates in the United States, are exceptionally high. They are necessitated by a policy laid down by Congress that the railroad shall pay its own way and not require annual appropriations to meet operating deficits. This policy clashes with the one under which the railroad was constructed, namely to assist in the development of Alaska. The railroad does represent, however, a \$75,000,000 Federal contribution toward Territorial progress. As the Railroad Belt develops and population grows, traffic over the line should increase sufficiently to permit a scaling down of existing rates.

Kenai Peninsula

Kenai (pronounced keen'eye) Peninsula projects southward from the Alaska mainland into the Gulf of Alaska. On the east lies Prince William Sound, on the south the Pacific Ocean and on the west Cook Inlet. Even on the north the peninsula is almost pinched off by the long fingers of Turnagain Arm and Passage Canal. The Kenai shoreline is a little over 1,000 miles long. The area of the peninsula is approximately 9,000 square miles, a little larger than the State of Massachusetts. For the most part the peninsula is a rugged, mountainous region, well timbered in the lowlands, but on the west side there are extensive plateau lands on which only grass grows. In other areas, the peninsula presents such varied features as fiorded shore, glaciers

radiating from a large ice cap, vast muskegs, swift rivers and three very large lakes, Tustumena, Skilak, and Kenai. Abundant fish and game make the Kenai a sportsman's paradise. Coal is found in many places along the Cook Inlet shore, while other minerals, including significant deposits of chromite, are distributed throughout the peninsula. The agricultural possibilities of the section lying north of Kachemak Bay on the west side of the peninsula are very favorable, and have already been discussed. Livestock raising appears to offer special promise in this area.

Kenai Peninsula suffers from the lack of roads connecting the promising agricultural region of the west coast with the railroad and highway lines on the east. While it has been demonstrated that good farms can be developed in the Homer country, they will have no dependable outlet for their products until a road is built across the peninsula. Cook Inlet is difficult to navigate because of its very great tides and shallow waters, which make it necessary for ocean vessels to anchor from three to five miles off shore. Vessels of good size can enter Kachemak Bay, but the present dock at Homer cannot accommodate them very satisfactorily. Small boats go up the Kenai and Kasilof rivers a short distance on high tide. During the winter, the rivers and a large portion of Cook Inlet itself are frozen. Airplanes from Anchorage serve Homer and other settlements, but roads are the crying need of the area. A feasible route exists from Homer along the Cook Inlet shore to the village of Kenai and then inland to connect with an existing road at Russian River.

Both railroad and highway run the length of the peninsula on its east side. From Seward on Resurrection Bay, the Alaska Railroad connects with Anchorage and other Railroad Belt points to the north. A highway, also beginning at Seward, extends as far as Turnagain Arm. It has been proposed that this highway should be extended to Anchorage, by either skirting, bridging, or ferrying Turnagain Arm. Preliminary surveys have been made for a bridge at this point costing up to \$3,000,000.

The recreational resources of the Kenai country are exceptionally rich. Some of the best hunting, fishing, and scenery in the world may be enjoyed there. North of the agricultural lands of the west coast are found the largest moose in the world, roaming the Kenai National Moose Range, which extends over a vast poorly drained area in the northwest section of the peninsula. This reserve adjoins the Chugach National Forest, whose Kenai Division covers the northeast section of the peninsula. Other game found on the Kenai includes mountain sheep, mountain goat, black and brown bear, ducks, geese, ptarmigan and grouse. The Russian and Kenai rivers in the center of the peninsula provide good fishing for the largest rainbow trout in the world, running up to thirty-three inches in length.

Seward is the largest town on Kenai Peninsula. In addition to the ocean terminus of the Alaska Railroad, Seward has other resources: small fishery and sawmill enterprises, an excellent harbor and a beautiful surrounding mountain countryside with good recreational possibilities. North of Seward the railroad and highway run through the small settlements of *Lawing* and *Moose Pass*, while the highway continues to *Sunrise* and *Hope* on Turnagain Arm.

Portlock, *Port Graham*, and *Seldovia* are isolated fishing villages on the southwestern coast of the peninsula. On Seldovia's good harbor, visited by ocean steamers, are located three fish canneries, two herring-curing plants and a small sawmill.

Homer is the center of the rapidly developing agricultural area on the west side of Kenai Peninsula. The people of Homer have cooperated in building and maintaining a telephone line and a dock, obtaining the services of a public-health nurse, holding an annual fair, providing marketing facilities for their farm products, etc. Recently a small cold-storage plant was established. A small cannery packs fish, clams, and crabs. *Ninilchik*, *Kasilof*, and *Kenai* are small settlements along the Cook Inlet shore, with a predominantly Indian population. At Ninilchik a small herd of cattle has descended from animals brought to Alaska by the

Russians more than a century ago, maintained exclusively on native pasture and feed.

The Matanuska-Susitna Valleys

Practically everybody has heard of the Matanuska Valley, where 200 families were settled by the Federal Government in the early 1930's after they had become destitute on farms in Minnesota, Michigan and Wisconsin. Many of these people still live in the valley. For the most part they have established successful farms and have become substantial citizens.

The Matanuska Valley lies at the head of Knik Arm. Its center, the town of Palmer, is about fifty miles northeast of Anchorage, with which it is connected by rail and highway. It also has both rail and highway connections with Fairbanks. The valley itself is about fifty miles long and sixteen miles wide. Although the Matanuska River empties into an arm of the sea only a few miles below Palmer, the open ocean is about 250 miles away by the semi-circular sweep of Knik Arm and Cook Inlet. Except on the west, where the broad Susitna plains form a continuation of the area, the valley is ringed by mountains, which provide an eye-filling prospect and also do things to the climate which help make the valley the best farming area in Alaska. About 1,000 square miles are contained in the part of Matanuska which is not too far up the hillsides to have agricultural value. Because of shallow soil, poor drainage and other unfavorable factors, however, considerably more than half of this area is worthless for any agricultural use. Since only about forty-four square miles are now in farms, possibilities exist for considerable expansion.

Almost all the good land of the valley bears a fairly dense forest cover of birch and spruce, many trees being a foot or more in diameter. Numerous lakes and streams occur in the valley, and through its floor run the Matanuska and Knik rivers. Most of the farms get their water from wells fifteen to a hundred feet deep. In the near-by Talkeetna and Chugach mountains there are estimated to be 200,000 acres of range land suitable

for grazing cattle or sheep, now used only by wild animals including mountain sheep, mountain goats and moose. The surrounding country is particularly attractive and presents good opportunities for summer and winter outdoor recreation.

The Susitna Valley, which lies to the west of the Matanuska, constitutes an extension of the same type of country. Its 8,000 square mile area is almost wholly undeveloped. Just how much of its land is suitable for agricultural settlement is unknown, but certainly there is room in this general area for many hundreds, if not thousands, of farms.

Palmer is the community center of the Matanuska Valley and the headquarters of the local co-op, with a dairy, cold-storage plant, slaughterhouse, garage, warehouse, and large general store. A good school and hospital are located here. Through this section of the valley run ninety-two miles of line of the Matanuska Electric Association, Inc., established with the help of an REA loan, and almost every farm has electricity. The cost of this service in 1943 averaged about \$5.75 per month per farm. *Matanuska* is a small settlement a few miles southwest of Palmer. A branch of the University of Alaska Agricultural Experiment Station is located there. *Wasilla*, west of Palmer, is another small rural community. It has the best air field in the valley. *Sutton*, *Eska*, and *Jonesville* are on the edge of the valley in the Matanuska coal-field district.

Cook Inlet

Except at Anchorage and on the west side of Kenai Peninsula, very few people live along the shores of Cook Inlet, which is named for the famous English explorer, Captain James Cook, who passed this way in 1778. This very remarkable body of water, with its extensions of Turnagain and Knik arms, pierces the Central Alaska coast for a distance of more than two hundred miles. Its great length, shallow depth and gradually narrowing character give it the famous tides which have been mentioned. Making the proper calculations, an old-timer with a skiff can

ride the tide for many miles up or down the inlet as swiftly as though his boat were equipped with an outboard motor, although in some stretches of the inlet he is likely to have a long walk ashore over muddy tidelands at the end of his journey. Neither shore of Cook Inlet is very attractive or seems to hold much promise for future development, outside of the Kenai agricultural area, which has already been mentioned. The inlet has a fishery of minor importance.

Tyonek, a fair-sized Indian village, is the only settlement on the western shore. Smaller places around the head of the inlet include *Susitna* and *Knik*. Lying back from the inlet on the divide between it and Bristol Bay is the largest lake in Alaska, *Iliamna*. Along its shore and that of Lake Clark to the north are scattered the small native villages of *Nondalton*, *Newhalen*, *Goose Bay*, *Pedro Bay* and *Iliamna*. The residents of all these places live primitive lives of hunting, trapping, and fishing.

Kodiak-Afognak Islands

Kodiak is the largest island in Alaska, being about one hundred miles long and about sixty miles wide. Afognak Island lies just to the northeast of Kodiak, and these with many near-by smaller islets form an island chain about 160 miles long, half screening the entrance to Cook Inlet. A map containing the contours of the land which lies under the sea as well as that above water shows this island group to be really an extension of the mountain range of Kenai Peninsula, with the broad "valley" of Cook Inlet and Shelikof Strait separating it from the higher mountain range of the Alaska Peninsula to the northwest. Kodiak alone is about three times the size of Long Island. Its shores are so deeply indented with bays that no point on the island is more than eighteen miles from salt water. This, however, does not prevent the mountains at the center of the island from rising to heights exceeding 4,000 feet. The many harbors and bays, which are ice-free throughout the year, make water transportation the principal means of getting about in the region. There

are no roads in the interior of the island, except in the vicinity of the town of Kodiak.

Afognak is fairly well timbered with spruce, and the entire island is embraced in the far-ranging boundaries of the Chugach National Forest. The northeastern end of Kodiak as far as the town of Kodiak has a growth of young trees, chiefly white spruce. Westward from this point, the only trees are a few deciduous ones in the more protected valleys. Much of the island supports a rich growth of native grass, consisting principally of red-top, a salt-water sedge, and wild rye, which furnishes good pasture and can also be cured to make native hay. It is said that a team of horses abandoned many years ago in the Eagle Harbor and Pashikshak region of Kodiak by cannerymen wintered on the range for ten years, dying finally of old age. The grass grows on flats at the head of fiords and on slopes up to 1,500 feet. The soil and climate are good. After looking over many localities along the Alaska coast, a committee of Icelanders from Wisconsin, who were seeking to encourage immigration by their countrymen, reported in 1874:

Judging from soil and climate there is no reason why everything that succeeds in Scotland should not succeed in Kodiak. Pasture land is so excellent and hay harvest so abundant that Icelanders would make sheep-breeding and cattle-raising their chief means of livelihood. We are convinced that Alaska will suit our countrymen better than any other land on earth.

Fish similar to those available in the waters of Southeast Alaska abound in the Kodiak vicinity. In the northwest section of the island is the Karluk River, one of the famous red-salmon streams of Alaska, which supports a very important fishery. Kodiak Island has nineteen salmon canneries. Many game animals, headed by the renowned Kodiak brown bear, make the island their habitat. Afognak is the scene of a successful experiment in introducing elk from the Olympic Peninsula of the State of Washington. These animals are rigidly protected at the present

time. All of Kodiak Island, except for the peninsula on which the town of Kodiak is located and the immediate vicinity of Karluk, is contained in the Kodiak National Wildlife Refuge.

Kodiak is the only settlement of any size in the area. This town was founded by the Russians in 1792, and since that time has been prominent in the history of western Alaska. The first Russian settlement in Alaska was established eight years earlier at Three Saints Bay, not far away, but has been abandoned for many years. Kodiak is a distributing point for a large area of western Alaska. An important naval base has been established near Kodiak, furnishing a market for livestock and other farm products from Alaska agricultural areas as far distant as the Homer district of Kenai Peninsula.

The other villages in the area, including *Woody Island*, *Old Harbor*, *Alitak*, *Karluk*, *Larsen Bay*, *Afognak*, and *Ouzinkie*, are inhabited principally by natives of a mixed Eskimo, Indian, Aleut, and Russian extraction.

Alaska Peninsula

The Alaska Peninsula is a high, spiny ridge 450 miles long and, at its eastern end, about 100 miles wide. Its most spectacular feature is the series of active or quiescent volcanoes which lie along the summit of the ridge. The most famous of these, Mount Katmai, erupted with great force in 1912, covering the peninsula, Kodiak Island, and the sea for many miles around with a thick layer of ash, which fell from the sky for days. As the peninsula extends westward it gradually narrows, the land becomes less bold in relief, and the volcanoes stand out more clearly from the surrounding terrain.

At its eastern end the Alaska Peninsula has a few scattered areas of moderate-sized trees, which soon diminish in size and frequency as the area is traversed westward. Over most of the length of the peninsula only grass and small shrubs cover the slopes. While offering some grazing possibilities, the grass cover in this region is generally less luxuriant than on Kodiak. In the

eastern portions of the peninsula, winter browsing is furnished by alder, willows, and various shrubs. Wildlife is not so abundant as in many other sections of Alaska, although very large brown bear roam the area. The hide of a record bruin shot here squared 11½ feet.

Mount Katmai is surrounded by the 2,697,590-acre Katmai National Monument, notable chiefly for the manifestations of volcanic action which may be observed there. The mountain, in "blowing its top" in 1912, left a crater measuring eight miles around, in which now nestles a milky blue lake a mile long. The most spectacular feature of the monument is the Valley of Ten Thousand Smokes, whose many steaming fumaroles recently have been reported relatively quiescent. Some of these jets of steam are thrown more than a thousand feet in the air, where they merge in a great cloud which is a magic screen for weird and beautiful effects when illuminated at night by the red glow from the volcanoes. Deposits surrounding the fumaroles are tinted all shades of the rainbow. Due to its remote location, very few people have ever visited Katmai.

From a point opposite the center of the Kenai Peninsula to the summit of Mount Veniaminof, all of the Alaska Peninsula has been reserved recently for petroleum explorations. Oil seepages have been observed at several places in this area, notably at Iniskin Bay and Jute Bay. Some coal also exists toward the western end of the peninsula, and has been used for local purposes.

Off the coast, particularly in the vicinity of the Shumagin Islands, codfish are caught in large quantities, mostly by ancient windjammers from Puget Sound. This fishery is believed capable of standing considerable expansion.

Transportation for the Alaska Peninsula, as for the Aleutian Islands farther west, was infrequent and undependable even before the war. The waters are treacherous and stormy, and the development along shore too slight to create profitable traffic. Of course, no roads exist on the mainland. Early in the recent war, several natives actually starved to death in the Kanatak

vicinity as a consequence of the failure of local food sources and the non-arrival of expected small vessels from Kodiak.

The settlements of the south side of the Alaska Peninsula and near-by islands are very small. The population is almost exclusively native. Probably not more than a hundred white people live in all the long stretch of country between Cook Inlet and the tip of the peninsula. The native villages of this area include *Kanatak*, *Chignik*, *Perryville*, *Sand Point*, *Unga*, *Squaw Harbor*, *Pavlof*, *Belkofski*, *King Cove*, and *Sanak*.

Aleutian Islands

Thousands of American boys know only too well what the Aleutian Islands are like. The region was described aptly though obliquely by a remark which had wide currency at the time we were developing bases from which to reclaim Attu and Kiska. This was to the effect that it would serve the Japanese good and right if they were made to come back and live in the Aleutians after the war. The Aleutians are an inhospitable region, without trees, virtually without game or fish, without significant mineral deposits, without human inhabitants, but with lots of weather, all of it bad.

There are thousands of islands in the Aleutian chain, ranging from Unimak, the most easterly, which is about seventy miles long and twenty wide, to small rocks and reefs. About thirty of the islands are large enough to have names which you may have heard. These are ranged in four separate groups. Beginning with those nearest the Alaska mainland, they are the Fox Islands, including Unimak, Akun, Akutan, Unalaska, Umnak, Kagamil, Chuginadak, Herbert, Yunaska, and Amukta; the Andreanof Islands, including Seguam, Amlia, Atka, Great Sitkin, Adak, Kanaga, Tanaga, and Gareloi; the Rat Islands, including Semisopochnoi, Amchitka, Little Sitkin, Rat, Kiska and Buldir; and the Near Islands, including Semichi, Agattu, and Attu.

The islands are the peaks of a drowned mountain range, a continuation of the Alaska and Aleutian ranges of the mainland.

Most of them rise to considerable heights, the most elevated point being a 9,387-foot peak on Unimak. As on the Alaska Peninsula, many of the mountains are volcanic. Attu, one of the most rugged of the islands, measures only thirty-five by twenty miles but has mountains three thousand feet high. The Aleutian campaign was fought over this heartbreaking terrain.

Only five harbors in the entire thousand-mile chain can accommodate fair-sized vessels. These are on Akun, Unalaska, Adak, Kiska, and at Massacre Bay on Attu. The Aleutian waters are an eddying maelstrom of strong currents from the Pacific Ocean and Bering Sea, but the tides, though irregular, are not high, averaging only about three and one-half feet in rise and fall.

While no trees grow naturally in the Aleutians, a clump of thirteen spruces planted by the Russians in 1805 at Dutch Harbor is now about twenty-five feet high. The typical cover consists of the grasses beach rye and sedge growing coarsely and usually on ground too rough and steep to permit mowing for hay. The soil, while rich, tends to be thin, wet, and lacking in nitrogen. Experiments with growing vegetables have proved disappointing. Sheep have been introduced successfully on the eastern islands. Foxes thrive on many of the islands, and furnish the main source of income for the Aleut inhabitants. Sea otters, almost exterminated by excessive hunting in the days of Russian occupation, are coming back slowly. Murres, auklets, puffins, cormorants, gulls, kittiwakes and guillemots are among the species of sea birds which nest in great numbers on these islands and make them one of the great rookeries of the world.

Before the war not a soul inhabited the 570-mile stretch of islands between Atka and Attu. At *Attu* a village of forty-three Aleuts and two white teachers disappeared with the Japanese occupation, and the fate of these people remained unknown until recently when all but one of the white teachers (who had been slain) were found alive and well in prison camps. Other Aleut villages of the chain are *Atka*, *Akutan* and *Unimak* on the islands

of the same names, *Nikolski* on Umnak, *Chernofski* and *Kashega* on Unalaska, and *False Pass* on Unimak. Akutan is the site of an abandoned whaling station. *Unalaska*, with *Dutch Harbor* on an island in the same bay, had the largest population before the war and has always been the headquarters for activity in the Aleutians. The harbor there at one time was the busiest in Alaska, being located at an important crossroads of the Pacific at the entrance to Bering Sea. A forward naval base which was established at Unalaska in 1940 was bombed heavily by a Japanese carrier force at the time Kiska and Attu were occupied in the summer of 1942.

All of the 375 native residents of the Aleutians, who had been evacuated to Southeast Alaska in 1942, were returned to their island homes in 1945. All, that is, except three, who elected to remain in the more developed southeastern section. The others vastly preferred their bleak native islands. Their principal objection to Southeast Alaska was that trees grow there.

Bristol Bay

Bristol Bay is important for one thing—the immensely valuable red-salmon fishery which exists in this large, shallow extension of Bering Sea just north of the Alaska Peninsula. This is by far the most important district in Alaska—or in the world, for that matter—in the production of this species of salmon, which brings a very high market price. The red salmon spawns only in stream systems which contain lakes. Bristol Bay, whose many rivers—Kvichak, Naknek, Egegik, Nushagak, and Ugashik—all originate in large lakes, provides an ideal habitat. The bay itself, while very large, is no more than 300 feet deep. The area's twenty canneries produce a pack which varies in size with the cycles of the salmon runs, but which averages about a million cases a year. A case of red salmon at current prices is worth from \$15 upward. Unlike most other salmon fisheries of Alaska, the fish here are taken exclusively in nets, most of them gill nets drifted from small boats which by regulation must be powered

by sail. The red salmon, because it does not strike at lures or bait, cannot be taken by hook and line, and traps are banned in the area. The Bristol Bay pack is put up in a season which lasts only about one month, from late in June to late in July.

Most of the Bristol Bay shore is low tundra country, extending back unbroken to where an occasional volcano may be glimpsed in the far distance. The area is entirely outside of the forest zone. Trapping is an important activity in the winter for the native residents, who are Eskimos, the farthest south representatives of that race in Alaska. Most of the fishermen and cannery workers are brought into the area from Puget Sound or California for the short canning season. After the cannery ships depart, laden with their valuable pack, Bristol Bay is a lonely region until return of the fishermen the following year. Airplane transportation from Anchorage is available at all seasons.

Dillingham and *Naknek* are the only year-round settlements of any size. *Aleknagik*, located up river from Dillingham, is an interesting settlement of Seventh Day Adventists, who formerly lived principally by fishing for trout, on which a bounty of 2½ cents apiece was paid jointly by packers and the Territorial Legislature in order to clear them from streams where they were believed to be detrimental to the propagation of salmon. Other settlements of the Bristol Bay region, most of them native villages, include *Kanakanak*, *Clark's Point*, *Ekwak*, *Levelock*, *Egegik*, *Pilot Point*, and *Ugashik*.

Bering Sea

The Bering Sea region, as here described, includes the shore between Bristol Bay and Seward Peninsula, and the lower portions of the Yukon and Kuskokwim valleys, together with the Bering Sea Islands, of which St. Lawrence, Nunivak and the Pribilofs are the most important. Bering Sea itself, except just north of the Aleutians and west of the Pribilofs, is a shallow body of water, so shallow that vessels of moderate draught sometimes

go aground out of sight of land. Bering Sea fills with drift ice in the winter, stopping water transportation for from seven to eight months of the year. The coastline has few indentations and lacks deep-water harbors, cargoes usually having to be lightered ashore.

The land along the Bering Sea coast is low. In places, scattered hills occur several miles back from the shore, while farther inland the land rises to a low, rolling plateau between the Alaska and Brooks ranges. No timber occurs for a considerable distance back from the coast except in the northern stretches along Norton Sound. There is, however, an abundant growth of willows, alders and other shrubs and herbaceous vegetation. The two great rivers of Alaska, the Yukon and Kuskokwim, drain all of the interior of the Territory into Bering Sea. Both rivers have very wide deltas, that of the Yukon being eighty miles across and threaded by several large and small entrances to the river. So flat is the country that the tidal influence is felt a hundred miles or more upstream. The low coastal region between the Kuskokwim and the Yukon is a maze of channels, sloughs, ponds, and lakes, around which water and shore birds nest by the millions. This area remains largely an unknown land, as far as the white man is concerned. It has never been mapped satisfactorily.

The Eskimo inhabitants paddle and pole small boats into the back country but themselves seem vague on just what the land is like and even where the villages are located. It has been possible in recent times to reach some of these villages by airplane. A much-used portage connects the Yukon and Kuskokwim valleys at the point where the rivers come closest together. The native people exist in a primitive manner which has changed hardly any, if at all, since the white man came to Alaska, although the introduction of reindeer has proved of great benefit to them in some localities. Fishing, trapping, and hunting are the simple pursuits of the Eskimos of the area. Except for school teachers, missionaries, and an occasional miner, almost no whites live in this section of Alaska.

Transportation is furnished to the lower Kuskokwim in the summer by small steamships plying directly between Seattle and Bethel, where cargo is transferred to river boats to be distributed throughout the large watershed of that river. The lower Yukon is served to a certain extent through the port of St. Michael, from which launches run to the mouth of the river, sixty miles south. For the most part, however, even the lower stretches of the river are served by steamboats plying downstream from Nenana. The Alaska Railroad operates such boats as far as Marshall. The airplane has played an important role in opening up this country, bringing it within a few hours of such centers as Anchorage.

On Goodnews Bay, near the southern end of the Bering Sea area as here described, an important placer deposit of platinum has been mined since 1926, giving the region its only important modern industry. Coal has been found on Nunivak Island and near Bethel.

The Nunivak Island country is practically indistinguishable from that of the near-by mainland. This has proved to be a particularly good reindeer range, herds of ninety-nine introduced in 1920 and eighty-nine in 1930 having grown to about 30,000 animals at the present time. This island is also the scene of the successful reintroduction of musk ox from Greenland. St. Lawrence and King islands in Bering Sea support Eskimo populations of a primitive seal oil and ivory culture.

The Pribilof Islands of St. Paul and St. George, lying in the southern part of Bering Sea about two hundred miles northwest of Dutch Harbor, are the renowned sole breeding grounds of the fur seals which range Pacific Coast waters almost as far south as the equator. From May to August the seals are at home on these rocky Alaska islands. Their highly polygamous love-life recently has been the subject of polite popular interest, and of several articles in the magazines, since the war turned a spotlight even on this remote section of Alaska. Many years ago these seals were fair game on the high seas for huntsmen of all nations, and

were being depleted with remarkable rapidity by this unscientific slaughter. In 1911 the United States, Great Britain, Japan, and Russia signed a treaty which left the killing of seals to be done on the Pribilofs by the United States, which divides the annual take with the other signatories. Japan dropped out of the bargain in 1941. In the light of what happened shortly thereafter, it seems not illogical to suppose the Japanese took this action because they did not want to feel bound to share the Pribilof proceeds with anyone after Alaska became theirs. Although large numbers of highly valuable pelts are taken every year, the herd has been rebuilt from 130,000 animals in 1910 to something over 2,000,000 today. The killing and skinning of the seals, together with the processing of by-products from these operations, provide the Aleut residents of the islands with rewarding employment. The "cropping" of blue and white foxes which roam the islands furnishes winter employment. The Japanese threat to western Alaska caused all the Aleut residents of the islands to be evacuated to Southeast Alaska in 1942, but they have now been returned to the Pribilofs.

St. Paul and *St. George* are the prosperous Pribilof villages. On *St. Lawrence Island* *Gambell* and *Savoonga* are good-sized Eskimo villages. Along the mainland coast of Bering Sea, the principal villages are *Shaktolik*, *Unalakleet*, *Hooper Bay*, *Kipnuk*, *Kwigillingok*, and *Kwinhagak*. *Mekoryuk* is the largest village on *Nunivak Island*, and *Tanunak* the principal place on *Nelson Island*, which is separated from the mainland only by a narrow slough. *Bethel* is the metropolis of the *Kuskokwim Valley*, other native villages of fair size along this river or in its vicinity including *Eek*, *Napakiak*, *Napaskiak*, *Kwethluk*, *Nunapitchuk*, *Nunachuk*, *Akiachak*, *Akiak*, *Tuluksak*, *Kalskag*, *Aniak*, *Napamute*, and *Stony River*. Dozens of villages are clustered along the lower *Yukon*, almost all of them being on the north bank, which being higher is less subject to flooding. Included are *Chaneliak*, *Akulurak*, *Mountain Village*, *Ohagamute*, *Russian Mission*, *Stuyahok*, *Paimute*, *Holy Cross*, and *Shageluk*.

Above this point the inhabitants are not Eskimos but the Athapaskan Indians of the interior. *St. Michael*, on an island of the same name north of the Yukon entrance, once was a port of considerable importance. In 1897-98, a large tent city sprang up here almost overnight, as gold seekers awaited transportation up the Yukon to the Klondike.

In all of the places named in the foregoing paragraph, the number of white inhabitants totals less than 300, while there are something more than 6,000 natives, and in the many smaller settlements of the area the population is almost wholly native. The only places in the region with more white than native inhabitants are *Platinum*, the site of the Goodnews Bay platinum mine, and *Marshall*, the Yukon River transportation center. Bethel, which fulfills the same function on the Kuskokwim, normally has about one hundred white and two hundred native residents.

Seward Peninsula

Although it really does not extend very much farther west than the more extensive land bodies which match it in the Bering Sea to the south and the Arctic Ocean to the north, Seward Peninsula is important in global geography because of the way the Chukchi Peninsula reaches out from Asia to meet it. The tip of Seward Peninsula at Cape Prince of Wales is only 56 miles away from East Cape, Siberia, which is clearly visible from the Alaska mainland on a fair day, together with the two Diomedede islands in the middle of Bering Strait. The deep indentations of Norton Sound and Kotzebue Sound set the region off in a clearly defined peninsula, which is about two hundred miles long and an average of a little more than one hundred miles wide. Economically and culturally, Seward Peninsula is equally well defined. This is one of the important placer gold-mining regions of Alaska and the only place on the Territory's entire western front where the white man has gained a firm foothold.

Most of the coast of Seward Peninsula is low and flat, with extended offshore bars which make it necessary for ships to lie well out and lighter their cargoes ashore. Back of the coastal plain rise flat-topped hills of from 200 to 2,000 feet in altitude which extend plateaulike in broad benches over most of the peninsula. This upland province culminates in scattered mountain ranges of fairly sharp relief. In the protected valleys of the southeastern corner of the peninsula grow the last sparse stands of the spruce-birch forest of inland Alaska. Most of this area is a treeless tundra country in which the cover is composed of about thirty per cent lichens, twenty-five per cent sedges, twenty-five per cent shrubs and twenty per cent grasses, weeds, and mosses. Along the shore and in the stream bottoms the tundra is wet and boggy, while a dry tundra occurs on the better-drained slopes. Higher elevations are entirely devoid of vegetation. The ground of the entire area is permanently frozen to a great depth, with the summer thaw usually penetrating only from five to ten inches.

Because of the icing of Bering Sea which confines navigation to a brief summer period, the region until a few years ago lost touch with the world for seven or eight months of every year. But the airplane now serves Seward Peninsula at all seasons, and it can no longer be said that "even God goes out on the last boat." Nome has developed as an important stop on the land-bridge air route to Asia. Pan American Airways and a number of smaller operators fly to and within the region, which has about twenty-five small landing fields. Each of the mining centers has a local road system, although the total length of these disconnected stretches is only about 250 miles. In addition there are 105 miles of sled roads, an eighty mile tramway running north out of Nome and about a thousand miles of trails connecting all inhabited areas. Forty shelter cabins are located along the trails for the use of travelers, who would not be able to get far or exist long in this inhospitable region without them.

The former one-man method of gold extraction has given way long since to large-scale operations by expensive dredges, owned by corporations with offices in San Francisco or Boston. Several other metals exist on the peninsula in commercial quantities, the most interesting being tin, which is found in placer form near Tin City in the extreme western portion of the area. Here are located the only producing tin properties in North America. The second most important economic pursuit of the region is reindeer husbandry, now reserved exclusively for the Eskimos. Trapping is an important activity in the winter, the principal fur-bearers being fox, lynx, mink, marten, muskrat, and squirrel. Bird life and aquatic life are plentiful around the shores. Salmon, whitefish, tomcod, herring, pike, and smelt occur in the salt and fresh waters of the area and are as yet but little utilized. Various seals and whales are found along the sub-arctic shores.

Nome is the only large town of Seward Peninsula, its present population of about 1,500 comparing with 25,000 at the height of the Nome stampede in 1899. Today it is headquarters for the Federal Government in the Second Judicial Division, and the service center for most of northwestern Alaska. About eighty per cent of the white people of the region live in Nome. *Teller* on Port Clarence near the western tip of the peninsula has the only good harbor anywhere along this coast, and may ultimately develop as a port through which an increasing trade with Asia will be carried on. *Candle* on Kotzebue Sound, *Council* in the Ophir Creek mining area and *Haycock* at the far eastern edge of the region—mining centers all—are the only other towns with more than a handful of white residents. The more important Eskimo villages are *Buckland*, *Deering*, *Shishmaref*, *Wales*, *Dio-mede*, *Igloo*, *Solomon*, *Golovnin*, *Elim*, and *Koyuk*. *White Mountain*, lying on the Fish River back of Golovnin Bay, is the site of the most northerly of the Alaska Native Service vocational schools.

Arctic Slope

North of the Brooks Range with its summits of 10,000 feet and more, broad sloping plains extend to the Arctic Ocean. The Kotzebue Sound vicinity, which is classified here with the Arctic Slope, actually lies west, or even a little south of the Brooks Range, but its general character is similar to that of the more northerly Arctic Slope proper. This is by far the largest region we have yet considered, being almost 750 miles long and in places as much as 250 miles broad, an area of about 125,000 square miles in all; but there is less to say about it than almost any of the other areas of Alaska. This is partly because it is one of the least known regions, but principally because what is known of it indicates it is of very little potential economic value.

Most of the coast is low, rolling, tundra country, broken by numerous small lakes and streams. The largest vegetation consists of willows about six feet high, and these occur only in protected ravines. In the short Arctic summer the tundras are bright with the blooms from a profusion of flowering plants. All the ground, of course, is permanently frozen. The lichens which make up a large proportion of the tundra vegetation furnish sustenance to the reindeer herds which are the chief support of the Eskimo population. The white Arctic fox provides the region's most valuable native fur resource. Polar bears and aquatic mammals such as the oogrük, hair seal, walrus, and whale occur in fair abundance. The area contains very extensive wildfowl breeding grounds, which supply a large part of the North American continent. Fish of many species abound.

Coal seams crop out at places along the coast. Oil seepages have been observed southeast of Point Barrow, leading many years ago to the designation of a very large area as a naval oil reserve, but up until last year no systematic exploration had been made of these resources. In 1942 the entire Arctic Slope, an area of some 48,800,000 acres, was withdrawn from all further entry, as a war measure. The petroleum occurrences are now being investigated

by Seabees as well as civilian geologists of other Federal agencies.

North of Bering Strait the coast is accessible by sea for not more than three months of the year. Usually the Strait is free of ice by July 1, with Point Hope open about July 10. Vessels usually can navigate Kotzebue Sound by July 15, and Point Barrow can generally be reached about August 1. East of Barrow, leads open up from time to time in the ice pack, but conditions vary greatly from year to year. New ice begins to form at Barrow late in September, and in Kotzebue Sound about September 15. Under the influence of currents and winds, the pack ice in the Arctic Ocean sometimes drifts as rapidly as three miles an hour, causing the ice to pile up in pressure ridges as much as a hundred feet high when its movement is blocked by the shore. This region does not, however, have icebergs such as are discharged from the Greenland glaciers to drift in the North Atlantic. Since there is no access to the Arctic Slope overland, the extreme brevity of the navigation season imposes a serious handicap on the opportunity for exploiting the natural resources of the area in more than a very limited way. During the war, Russian freighters passed regularly through Bering Strait in the summer months between ports of the United States Pacific Coast and those of the Russian Arctic.

The white residents of the entire Arctic Slope, including Kotzebue Sound and the Kobuk and Noatak valleys, do not number more than about 100. They are mostly traders, missionaries, and teachers. The principal Eskimo villages include *Selawik*, *Kobuk*, *Shungnak*, *Kiana*, *Noorvik*, *Kotzebue*, and *Noatak* in the areas tributary to Kotzebue Sound, and *Kivalina*, *Point Hope*, *Point Lay*, *Wainwright*, and *Barrow* along the Arctic coast. Barrow is the largest of these villages and is notable for its far northern position and as the headquarters of activities along the Arctic coast of Alaska. East of Barrow, a few Eskimos live a nomadic life, moving from place to place in search of game and furs.

Interior Alaska

Left to us to describe is the great central basin of the Territory lying between the Alaska and Brooks ranges and between the Canadian border and the Bering littoral. This region is large. Its area of something over 250,000 square miles is about equal to that of the State of Texas. Unlike Texas, which is an entity only from the political standpoint, Interior Alaska possesses geographical unity or "regionality" to a remarkable degree. It is a very extensive tableland or plateau, but because of the greater heights which curl up at the edges of the region at north and south, it gives the impression not of being elevated but of being a large valley. Actually, the area ranges in elevation between 800 and 6,500 feet, with 2,000 feet being the mean which represents a very large part of the region. Tilted very slightly to the west, it is drained by the large river systems of the Yukon and Kuskokwim and their tributaries. The eastern boundary is artificial in a geographic sense, and the natural province extends well into Canada.

To travel through Interior Alaska on its great rivers is to gain the impression that all of the region is well forested with white spruce, black spruce, larch, poplar, aspen, and birch, but these widely distributed stands of moderate-size trees occur in such density only along the rivers. From ten to twenty-five miles back from the water the trees become smaller and thin out rapidly. Timber line is at about 3,000 feet. Brush, grass, and tundra cover wide expanses. Swamp lands, lakes and numerous old river channels characterize the broad central valleys of the Yukon and Tanana. The soil is permanently frozen a few inches or feet below the surface. Within the Yukon and Tanana valleys, however, there are estimated to be at least 4,500,000 acres of potential farm land, with good soil in well drained locations. The trees of the so-called "interior forest" are too small and their volume per acre too scant to justify export lumbering operations, but this timber is of great value for local use in the development of

mining, agricultural settlement, and other industries. Fire is an ever present danger to the timber and tundra lands of Interior Alaska, where millions of acres have been burned over.

Placer gold occurs extensively over most of the interior region, whose dredges and smaller operations produce about \$15,000,000 worth of the precious metal in a normal year. Lignitic coal is found at many places, and is mined at Healy River on the north slope of the Alaska Range for use in Interior Alaska, where it is the principal fuel. Copper, tungsten, mercury, tin, antimony, and other minerals—in unknown quantities—are scattered over the region. Most of the settlements of the interior owe their existence to gold mines, although some of the smaller ones are supported chiefly by transportation activities or by such native pursuits as trapping and fishing. Furs produced by the region include fox, mink, marten, lynx, otter, ermine, muskrat, beaver, wolf, coyote, wolverine, black bear, hare, marmot, and squirrel. Fur farming is a thriving and growing industry. The caribou is the principal and most widely distributed big-game animal.

Interior Alaska can best be understood if it is broken down into its principal sub-regions. Keeping to the plan of division according to transportation areas, all of which of course are now tied together by the airplane, we will consider separately the Yukon River, Tanana Valley, the mining centers of the upper Kuskokwim, and the settlements along the Richardson Highway and connecting roads.

Yukon River

Among United States rivers only the Mississippi and Missouri are larger than the Yukon. It rolls for 2,300 miles and drains a watershed of about 330,000 square miles. Part of this lies in adjoining sections of northwestern Canada, but the length of the river within Alaska alone is something like 1,500 miles, and the Alaska watershed measures a little more than 175,000 square miles, an area larger than the State of California. In the Yukon flats area around Fort Yukon the river is as much as twenty miles

wide, while it narrows to only 250 yards in the lower ramparts above Tanana. Upstream in Canadian territory, the river (there called the Lewes) is hardly more than one hundred feet wide as it boils through the only canyon in its entire length. The elevation of the river bed is about 1,060 feet at Dawson, 800 feet at Eagle and 200 feet at Tanana. The current gradually lessens as the river is descended. It averages about five miles per hour above Fort Yukon, four at Tanana, three and one-half at Nulato and three where it meets the tides from Bering Sea. For all its length in Alaska the Yukon is discolored with silt from glacial tributaries, though above the mouth of the White River in Yukon Territory, the water of the great river is clear and blue.

From time immemorial the Yukon has been an important transportation artery for the north country. There is evidence that before the arrival of the first white man, epidemics which began among the Chilkat Indians at the head of the Inside Passage were passed with amazing rapidity down the Yukon to the Athapaskans of the interior and finally to the Eskimos of Bering Sea, testifying to the role of the river as a trade route even in that early day. The Hudson's Bay Company extended its activities down the river as far as Fort Yukon, after having come overland by paddle and portage from the great inland sea from which it took its name. The Russian-American Fur Company worked up the river as far as Nulato. The Yukon was navigated successively by Indian canoes, the rafts of explorers and prospectors, the whipsawed boats of the Klondike stampededers, and by steamboats which entered the river from St. Michael as early as 1866. For its entire length in Alaska the Yukon is navigated today by stern-wheelers, the largest of which measure about 1,000 tons. The section below Tanana to Marshall is served by boats of the Alaska Railroad, while that above Tanana as far as Whitehorse, Yukon Territory, is the province of the Pacific and Arctic Railway and Navigation Company, one of the several British companies comprising the White Pass and Yukon Route, which also owns the narrow-gauge railway between Skagway and

Whitehorse. The Yukon navigation season averages twenty weeks, from late May to early October.

From the Alaska-Yukon border to Circle, and again below Tanana to Nulato, a few white men live along the river and engage in mining activities. The rest of the valley is pretty well given over to the Indians (and below Anvik to the Eskimos). The river itself is the heart and soul of the whole region. Over its great length it changes decidedly in character several times. The Yukon flats area of slow meandering channels cutting the river bottom into numerous islands extends for some three hundred miles between Circle and a point below Stevens Village, where hills rise on both sides of the river for one hundred miles to form the lower ramparts, so called to distinguish them from other ramparts existing upstream in Canada. At Tanana the hills fall away, particularly on the left bank of the stream, which for five hundred miles below Kaltag is low country subject to floods annually. Between Tanana and the delta, Ruby is the only town located on the south side of the river. As the delta is approached the land is low on both sides. Travelers drifting downstream into the Yukon flats area of 10,000 square miles are struck irresistibly with the impression that they are approaching the open seashore, and expect to hear the booming of the surf at any moment. The Yukon throughout its length is sprinkled generously with islands, being said to have more of these than any half dozen rivers of its size in the world put together. Except for this characteristic, the appearance of the country in the lower ramparts has been described as very like that of the Columbia River near the Cascades, the Hudson at West Point, or the Potomac at Harper's Ferry. The river freezes every year, but not uniformly over its length. There is the annual phenomenon of the river being blocked by ice at each end while still flowing freely in the middle stretches. This is the more remarkable since the portions which freeze earliest lie farther south than those which remain open longer. In general, ice forms late in October and does not break up until about the middle of May.

The principal tributaries of the Yukon in United States territory are the Porcupine, Chandalar, Tanana, Koyukuk and Innoko, most of which wind so tortuously through broad valleys that a score of miles of river must often be traveled in order to make good half a dozen miles of straight-line progress. This is also characteristic of the Yukon itself. Along certain of the tributaries live some of the most primitive and "unspoiled" native peoples in the world. One of the principal means of support of the aborigines of the Yukon is fishing for salmon, which run up the river more than a thousand miles above salt water. These fish are caught mostly by fish wheels, which turn slowly in the current while dippers on poles attached to the axis of the wheel scoop an occasional salmon into a trough where it is seized by the Indians before it can be appropriated by the ever present dogs of the Indian village. The salmon are dried to furnish winter food for humans and dogs.

Owing to the nomadic character of the Indians and the instability of the gold-mining industry, villages in this region are in turn busy or deserted, many of them today being only names on the map. Even such "large" places as Ruby and Tanana are practically deserted for the time being, while a boom is taking place at Galena due to construction activities in the vicinity. Yukon freighting below Tanana was heavier in the summer of 1944 than at any other time in history, with every available craft of whatever dimensions pressed into service. As a whole the Yukon valley has been hurt rather than helped by the war, as no war activities of any kind have touched the upper stretches of the river. The people have been waiting for the war to end and the young people to come home, so that normal activities may be resumed. After making a trip down the Yukon in 1944, an old resident of Interior Alaska summed up conditions as follows:

It was interesting to compare the river as it is now and the way it looked twenty years ago—and to find that there has not been much

change. The old cabins are a little more "cockeyed" and the people are a little bit older, but it's pretty much the same.

Access to the navigable portions of the Yukon system is furnished at several points: At Whitehorse, Y.T., it is touched by both the Alaska Highway and the White Pass and Yukon Railroad; at Circle, it is reached by the Steese Highway from Fairbanks; at Nenana (on the Tanana) by the Alaska Railroad, and via St. Michael by steamships from Seattle.

A cluster of mining villages, including *Chicken*, *Jack Wade*, *Franklin*, and *Steel Creek*, are on or near the Fortymile River, which flows back into Canada to enter the Yukon just across the border. These settlements are reached principally by airplane from Fairbanks. *Eagle*, just inside the Alaska border, is the customs port of entry from Canadian territory.

Fort Yukon is the site of the old Hudson's Bay post, which was abandoned by that company when it was found to be located in United States territory. It is now a rallying point and service center for the Indians of many villages in the surrounding Yukon, Porcupine, and Chandalar country. *Beaver*, *Stevens Village*, and *Rampart* are small predominantly Indian settlements on the least known and least developed section of the river. At Rampart an agricultural experiment station was maintained from 1900 to 1925, never in all that period failing to mature grain despite its location only a few degrees from the Arctic Circle. *Tanana*, located at the junction of the Tanana and Yukon, is one of the more important trading centers in the valley. From *Ruby*, wagon road and trail lead southward to the small mining settlements of *Long Creek*, *Poorman*, *Folger*, *Cripple*, and *Colorado Creek*. *Galena* has been of importance recently because of a large air field located there on the main airway from Fairbanks to Nome.

Koyukuk is a small village at the mouth of the Koyukuk River, along whose upper stretches are located the Indian villages of *Cut-off*, *Hughes* and *Alatna* and far upstream the mining, trading

and trapping center of *Wiseman*, which still revels in the notoriety it achieved a few years ago when it was the "Arctic Village" of a best-selling book of that name. Although the author went at some length into such matters as what trapper slept with what squaw, he kept on fairly good terms with the subjects of his sociological study by dividing his royalties among them. *Wiseman* is the deepest penetration, from the interior, of the north-of-the-Yukon country. The airplane has made it possible for the formerly isolated settlements of this area to become virtual suburbs of Fairbanks. Laying of a pipe line to tap the Point Barrow oil field would serve to open up much of this country between the interior and the Arctic Coast.

Nulato, at the mouth of the Nulato River, is the trans-shipment point between the Yukon River and an overland portage westward to Norton Sound. *Kaltag*, *Holikachuk*, and *Anvik* are native villages on the part of the river just above the merging of the interior region with that of Bering Sea. *Flat* and *Iditarod* are mining settlements located on the Iditarod River, a branch of the Innoko, one of the main tributaries of the Yukon.

Tanana Valley

The Tanana is a branch of the Yukon; it is also something more than that. Up to the present time it is the only area in all of Interior Alaska to support a population of any size. There are at least two good reasons for its preeminence. First, it is a rich placer gold region. Second, it has had good means of transportation to the coast for many years. Other important advantages are an invigorating climate, a strategic location at the crossroads of travel in the North, good agricultural land, and the fact that it "was there first" and hence became the center of gravity for many of the activities of the vast interior. Recently it has been of growing importance as a major stopping point on the main global air route between America and Asia.

By far the most important resource of the Tanana Valley, as far as past and present developments are concerned, are the

gold-bearing gravels, which caused a rush to Fairbanks on their discovery in 1902, and which have supported a substantial industry ever since. Most of the mining in the district is performed by large dredges which root along through stream beds which have been stripped of their overburden and thawed by water. This type of operation requires large capital investment and usually involves years of exploratory and preparatory work before the first returns are realized. It is a field for big business rather than for the humble prospector, and big business has taken it over.

The Tanana River rises almost on the Alaska-Yukon border and flows inside the big bend of the Yukon to join the larger stream at the village of Tanana. Fairbanks, the heart of the Tanana Valley and of Interior Alaska as well, is located not directly on the river but on Chena Slough, a sluggish sidewater of the Chena River, a tributary. The Tanana Valley is almost four hundred miles long and varies from twenty to about seventy miles in width between the Alaska range on the south and the rolling hills on the north which divide its watershed from that of the Yukon proper. Its area is estimated at 24,000 square miles. The braided channels of many lesser streams as well as the Tanana itself wind through broad gravel bottoms. Most of the valley bears a good forest cover of the interior type. Usable agricultural land of the Tanana Valley has been estimated at about 640,000 acres, but no one knows or has needed to know its extent with much certainty, as agricultural development up to the present time is very slight. About 600 acres were cultivated in 1939, when the last census of agriculture was taken. The ground is permanently frozen below the surface in all of this area.

The Alaska Railroad connects Fairbanks with the coast 418 miles to the south. A good local road system serves the principal mining camps of the Fairbanks district, while the Steese, Elliott, Richardson, and Alaska highways furnish overland communication with more distant points, including now the outside world. A gasoline service pipe line extends to Fairbanks from Skagway

and Whitehorse. Steamboats ply from Nenana to the Yukon and up and down its entire length. Smaller boats serve the upper stretches of the Tanana. Important as are all these means of transportation, they have been eclipsed in recent years by the spectacular development of aviation in this area. Planes from Fairbanks fly everywhere in Alaska on frequent schedules, and the local companies have built up a large patronage. Fairbanks, as has been noted, is also the most important Alaska air stop on the great circle route from the United States to east Asia and beyond. A cold-weather experimental flying base was established by the army at Fairbanks in 1940 and was rapidly expanded for broader purposes during the war years.

Fairbanks seems destined to become an important city in continental and world terms. It is the industrial, service, and transportation center for most of Interior Alaska. The near-by suburb of *College* is the site of the University of Alaska and of its main agricultural experiment station. Other places in the Tanana Valley region include *Hot Springs*, *Nenana*, *Big Delta*, *Tanana Crossing* (also called Tanacross), and *Northway*. The three last named are on the Alaska Highway and may see considerable activity if that road develops as an important tourist route. A ten-mile-wide strip, five miles on each side of the highway, has been withdrawn from all entry pending completion of a study whose object will be the insuring of orderly development in the area. This temporary reservation is expected to be relaxed to permit settlement as soon as scenic and recreational resources of outstanding attractiveness have been safeguarded. It is on the range near Big Delta that the buffalo herd of twenty-three animals introduced from the States fifteen years ago has increased to more than 200.

The Kuskokwim

The Eskimo country of the lower Kuskokwim Valley has already been described as part of the Bering Sea region. Scattered along the upper stretches of the river and some of its tributaries,

in a very different type of country, are a number of small mining settlements. The known mineral resources of the district include widely distributed gold placers and a few gold, cinnabar (quick-silver), and copper lodes.

In all, the Kuskokwim Valley contains almost 100,000 square miles. It is thought to contain large tracts of potential agricultural land, but because of the inaccessibility of the region and the remoteness of any dependable market for farm products no early development of this type is looked for here. Small river boats from Bethel serve the upper valley during the navigation season, but more and more the airplane has become the prime means of transportation in this area.

Nyac, on the Tuluksak River, takes its name from the initials of the New York Alaska Company, a mining firm whose operations center there. *McGrath*, *Takotna*, *Ophir*, and *Medfra* are settlements on the headwaters of the Kuskokwim. The size of these villages varies according to the activity of the mines and the seasonal migrations of the natives of the area.

The Richardson Highway

The highway system of Interior Alaska is a development of the trail routes which were scuffed out over a period of centuries by the feet of animals, Indians, trappers, traders, and prospectors. The Richardson Highway, still known fondly as "The Trail," was an important means of access to Interior Alaska long before the building of the Alaska Railroad. By 1907 the army had improved the trail to make it passable for horse sleds which could serve the forts along the Yukon River. In 1910 wagons could make the trip, and in 1913 the first automobile reached Fairbanks from the coast. A program of improvement and extension has been carried forward constantly since that time by the Alaska Road Commission to give the interior its present system of automobile highways.

The Richardson Highway runs from Valdez to Fairbanks. A spur to Chitina on the line of the old Copper River and North-

western Railroad is known as the Edgerton Cut-off. The Steese Highway extends from Fairbanks to Circle on the Yukon River. The Elliott Highway connects Fairbanks with the mining center of Livengood. This system has been greatly developed in the past few years through construction of the Glenn Highway. The Alaska Highway reaches the Richardson at Big Delta and also through a new section known as the Slana-Tok Cut-off, which connects with the older Nabesna Road to furnish a more direct route from Alaska Highway points to Anchorage and Valdez. The Richardson Highway is closed by snow every fall near Valdez, but is open over most of its length. The other roads in the system are not closed in the same manner, although all are subject to temporary interruption of service by floods, washouts, and unusually heavy snowfalls.

Along the Richardson Highway itself the principal settlements are *Copper Center*, which was the site of an agricultural experiment station many years ago; *Gulkana*, a trading post; *Paxson*, the center of an attractive fishing and hunting country, and *Rapids*, another sportsmen's paradise near the Black Rapids Glacier which in 1936 unaccountably rumbled forward about five miles in six months. *Chitina*, a headquarters for trappers and prospectors, is connected by rail motor car with *McCarthy* and the vicinity of the now abandoned Kennecott copper mine. The Glenn Highway has not as yet developed any sizeable settlements. A roadhouse (in Alaska a hotel) is located at *Eureka*, about midway on this road. *Glenallen* is the point of junction with the Richardson Highway. *Gakona*, *Chistochina* and *Slana* are small settlements along the Copper River on the Nabesna Road. *Nabesna*, at the end of that road, is a fair-sized mining camp. The small village of *Mentasta* on the Slana-Tok Cut-off is in the center of a highly scenic region which some day may attract many Alaska Highway tourists. *Tok Junction* is the point at which this cut-off reaches the Alaska Highway. *Livengood* (formerly Brooks) is the site of a large gold-dredging operation on the Tolovana River north of Fairbanks. *Fox*, *Chatanika* and

Miller House are mining camps along the Steese Highway, while *Circle Hot Springs*, on a short branch road, is a widely known mineral springs and the scene of an interesting farming venture in which vegetables which grow nowhere else in Alaska are raised with the help of the heat from the springs.

Circle, at the end of the road, is the only highway contact with the Yukon River in Alaska and also the most northerly point reached by road in the Territory. The town takes its name from a mistaken impression of its founders that it was located on the Arctic Circle, which actually lies some fifty miles farther north.

A CHAPTER ON NORTHWESTERN CANADA

BEFORE the war, much of northern British Columbia, north-western Alberta, the Yukon Territory, and the western portions of the Northwest Territories was practically uninhabited and inaccessible. This vast area of 750,000 square miles in north-western Canada was even less well developed and less well known than Alaska. Now, suddenly, this country has been opened up in a dramatic way by such developments as the Northwest Staging Route of airways, the Alaska Highway, and the Canol pipe line. By far the greater portion of each of these huge wartime projects lies within Canada. Their effect on the Canadian frontier promises to be even more far-reaching than their effect on Alaska. For one reason, this part of Canada had even fewer people to start with than Alaska. For another and very important one, the newly opened Canadian frontier is contiguous with the more highly developed sections of the country. There is no foreign soil which development must jump across, but progress can come as it did in our own West, as a gradual and steady extension of civilization. This tends to make the opening of the new Canadian frontier a major interest of that country instead of the relatively minor one the development of Alaska is to the United States.

As superlatives are needed to describe the Alaska country, so must the vocabulary be taxed to convey an adequate impression of the great size, diversity, and majesty of adjoining north-western Canada. Lying to the east of this area is the Precambrian shield, a rocky country of numberless lakes, rolling hills, and, as one goes north, little or no covering of soil or forest. Bordering this area on the west is a northward extension of the Great Plains, occupied by the north-flowing Mackenzie River and its tributaries, the Athabaska, Slave, Peace, Liard, Peel, and many others.

This region also contains such enormous lakes as Athabaska, Great Slave, and Great Bear, whose extent is not commonly appreciated. Great Bear and Great Slave together are about the size of Lake Huron, and each is much larger than Lake Ontario or Lake Erie. In the North we are dealing with a country of vast dimensions, and this is true of its lakes and rivers as well as its other physical features. While the Yukon River is almost as long as the St. Lawrence, including the Great Lakes, the Mackenzie is much longer, and is classed among the truly great rivers of the world. The Great Plains of the North are fairly uniform in contour, with their surface broken only by isolated hills or ranges of low mountains. This region is covered by forest to the shores of the Arctic, although a great deal of the country back from the rivers is the typical northern muskeg. West of this is the Cordilleran region, more diversified in its physical characteristics, less uniform in climate, and more varied in its natural resources of forests, soil, minerals, and wildlife.

In some of its southern areas, such as the Peace River district of Alberta and British Columbia, the Canadian frontier has already seen considerable settlement. Peace River is famous the world over for the quality and abundance of its cereal crops. But investigations indicate that with the development of adequate transportation facilities, much additional settlement is practicable in this region. A fairly comprehensive survey of development possibilities has been made of the twenty-million-acre area comprising subsidy-grant lands set aside by the Legislature of British Columbia in 1925 in aid of construction of the Pacific Great Eastern Railway. In this area alone, consisting of the so-called South, North, and Peace River blocks, there are estimated to be 1,581,200 acres of cultivable lands which could be improved by light clearing, grazing lands which could provide range for 159,000 cattle, 1,550,500 acres of commercial timber area with a total volume of 16 billion board feet of saw timber, power sites capable of developing 359,850 continuous horsepower, 950

square miles of petroleum and natural gas structures, and extensive deposits of placer and lode gold, coal, bog iron, diatomite, clay, and lime.

In its northern sections, western Canada presents less favorable agricultural possibilities, but great wealth in mineral, wildlife and scenic resources. An agricultural survey in 1943 along the Alaska Highway from Fort St. John to the Alaska border disclosed no large blocks of good farm land, but fairly promising tracts around Fort Nelson and west of Whitehorse, and many pockets of land throughout the region suitable for gardening. The Federal Department of Agriculture has established an experimental sub-station on an 800-acre tract 100 miles west of Whitehorse at the head of the Alsek Valley. The valleys of the Finlay in British Columbia and the Hay in northern Alberta also will offer possibilities for agricultural settlement when transportation is provided to them.

Forest resources include the valuable coastal forests of British Columbia, an interior forest awaiting road and rail development north of Prince George, and a vast northern forest of poorer quality and slower growth, which will nevertheless play a vital role in meeting local timber needs. The wildlife resources of northwestern Canada make it an important fur region and a great hunting and fishing ground for the sportsman. As in Alaska, the fur-bearers have already been exploited to the fullest limit consistent with wise management and conservation policies.

Minerals have always played an important part in opening up new country in the North. The Canadian region under consideration presents particularly favorable possibilities for the discovery of valuable mines. The belt of rocks occupying most of British Columbia and Yukon Territory is an excellent prospecting field for gold, silver, zinc, lead, copper, and some of the less well known metals. In this belt occurred the great gold placers of the Klondike and Cariboo. East of the Cordilleras, the economically valuable minerals are chiefly the non-metallics

and fuels. In addition, the mineral areas of Yellowknife and Great Bear Lake produce gold, radium, uranium, silver, tungsten, copper, and lead. Samples of tin, tantalum, columbium, beryllium, lithium, and indium, brought out of this country in the past few years, promise important mineral developments still to come. On the Pacific Coast, Canada appears to have the raw materials for an iron and steel industry in the future. Iron ore of good quality, limestone, and coal all occur on or near tidewater. In these resources, British Columbia is richer than the United States Pacific Northwest farther south.

Existence of the Alaska Highway should result in the discovery of important mineral deposits. The head of a Canadian Geological Survey party which recently made a mineral reconnaissance in this area says it is reasonable to expect that important deposits of gold and the base metals occur within workable distance of the highway or its branches. The Cassiar granite batholith passes through the section between Teslin and Watson Lake. Favorable ground is thought to extend two hundred miles northwestward from Peace River, crossing both the Alaska Highway and the Norman Wells road. Indications are that 20,000 square miles of virgin ground astride the highway in this area warrants close prospecting. Small deposits of silver, lead, zinc, copper, tin, and tungsten were found near the highway in 1944. The general geologic setting along the Norman Wells road is excellent. In southwestern Yukon, the copper-gold belt near the highway lies along the northern end of the Coast Range batholith between the formerly rich mines of Treadwell and Kennecott in Alaska. A gold discovery reported on the highway eighty miles east of the Alaska boundary in the summer of 1944 was said to assay \$190 per ton.

Coal occurs in many parts of northwestern Canada. The field in the Peace River canyon has bituminous coal which is the best in western Canada. Samples from a seam in this area gave an average heat value of 14,700 B.T.U., with low ash, sulphur, and

moisture content. A careful test by the Canadian Pacific Railway showed that only 13.1 pounds of canyon coal were used in driving a locomotive over a run which under identical conditions required 18.2 pounds of Canmore coal. There is also coal in the upper Skeena and on the Liard. Lignite occurs at a number of places on the upper Yukon, and coal is found on the Mackenzie, being mined for local purposes near Aklavik.

Oil became an important component of the northwestern Canadian picture in 1942 when the United States Army undertook to develop a field at Norman Wells on the Mackenzie River and move petroleum some 550 miles by pipe line to a refinery at Whitehorse and thence to points along the Alaska Highway through a gasoline service line. Actual drilling in the Fort Norman field had taken place as early as 1920. A small refinery constructed at that time produced about 25,000 barrels a year. But the army's decision really started a boom. Development was pushed rapidly despite many difficulties and much criticism. The Norman Wells crude-oil line was joined early in 1944 in the Mackenzie Mountains and commenced delivering 3,000 barrels a day to the refinery, which was in full production by early fall. To the end of September, 51 producing wells had been brought in in the Canol field, and two wildcatters were trying their luck outside the proven structure. Production in September of 1944 was 126,500 barrels. Up to that time, the field had produced in all about 1,304,000 barrels. With the withdrawal of the United States Army from the Canol project in 1945, the future of this development became one of the big question marks of the North.

The Canadian oil-bearing formation is not an isolated phenomenon. It is plainly in evidence in the oil sand region of the Athabaska. There are strong indications in the Peace River area. Natural gas has been struck at Fort Nelson. There are oil seepages in the vicinity of Watson Lake. The same indications are found on the shores of Great Slave Lake. A bitumen deposit a hundred miles southwest of Fort Norman was at one time mistaken for

coal. As the details of the oil picture are filled in, northwestern Canada might be found to be one of the great petroleum regions of the world. The bituminous sands at McMurray, Alberta, are of great extent but problematic value. Their exploitation on any important scale depends upon the development of economic methods of removing the heavy overburden which covers them and of separating the oil from the sand after the unusual material is mined. The Canadian Government has been helping finance a test program by the private company which is operating in the field. If asphalt can be produced at low cost, it should find wide use for road surfacing, and might lead to the early improvement of the Alaska Highway.

For all its great size and promise, northwestern Canada heretofore has supported almost no population. Whitehorse before Alcan and Canol was a sleepy settlement with about 650 inhabitants in summer and 350 in winter. At the height of construction activities in 1943, it was estimated to have a civilian population of around twenty thousand in its immediate vicinity, and the people of Whitehorse now speak rather confidently of a permanent post-war population of about three thousand. Dawson, capital of the Yukon, which had twenty-five thousand inhabitants during the Gold Rush, has perhaps twelve hundred today. In the valley of the Mackenzie, outside the oil-producing area, there are only scattered small trading posts. Fort Smith has perhaps three hundred or four hundred people. Hardly any of the other settlements, which appear in type so brave and bold on the map, have more than a score of souls. But those who have watched this lonely country over a period of years know that, just as surely as for Alaska, a new day is dawning for northwestern Canada. Development probably will come more slowly than in Alaska, but that it will come is inevitable.

The Canadian Provinces and the Federal Government have policies of their own in connection with preempting of land and utilization of resources. Inquiries respecting the Yukon Territory or Northwest Territories should be addressed to the Lands,

Parks, and Forests Branch, Department of Mines and Resources, Ottawa, Ontario. The Department of Lands and Mines at Edmonton, Alberta, and the Deputy Minister of Lands at Victoria, British Columbia, can answer questions as to lands and resources in those Provinces.

CLASSIFIED INFORMATION

DISTANCES

The following tables (all in statute miles) show the distances between principal places on the main rail, water, and highway routes to and within Alaska.

1—RAIL

ALASKA RAILROAD

| | <i>Mile</i> |
|---------------------|-------------|
| Seward | 0 |
| Portage | 66 |
| Anchorage | 112 |
| Eklutna | 140 |
| Matanuska | 151 |
| Palmer | 157 |
| McKinley Park | 348 |
| Nenana | 412 |
| Fairbanks | 470 |
| Whittier to Portage | 14 |

WHITE PASS AND YUKON ROUTE

| | <i>Mile</i> |
|------------|-------------|
| Skagway | 0 |
| Whitehorse | 111 |

2—WATER

(by shortest routes generally used)

[illegible]

Prince Rupert is 108 miles south of Ketchikan, Haines 18 miles south of Skagway, Yakutat 290 miles west of Juneau, Selkovia 168 miles from Seward.

3—HIGHWAY

| ALASKA HIGHWAY | | SLANA-TOK CUT-OFF & NABESNA ROAD | |
|---------------------|-------------|-------------------------------------|-------------|
| | <i>Mile</i> | | <i>Mile</i> |
| Dawson Creek | 0 | Tok Jct. | 0 |
| Fort St. John | 48 | Slana | 73 |
| Fort Nelson | 300 | Gakona | 135 |
| Liard River | 495 | Gulkana | 140 |
| Watson Lake | 635 | | |
| Teslin | 804 | Slana to Nabesna | 41 |
| Norman Wells Jct. | 836 | | |
| Carcross Road Jct. | 865 | | |
| Whitehorse | 917 | | |
| Haines Road Jct. | 1012 | EDGERTON CUT-OFF | |
| Burwash Landing | 1090 | Richardson Hwy to Chitina | 39 |
| White River | 1169 | | |
| Alaska-Yukon Border | 1223 | | |
| Northway Jct. | 1265 | | |
| Tok Jct. | 1305 | GLENN HIGHWAY & ANCHORAGE ROADS | |
| Tanacross | 1314 | | |
| Big Delta | 1423 | | <i>Mile</i> |
| Fairbanks | 1511 | Glenallen | 0 |
| | | Palmer | 143 |
| Haines to Jct. | 166 | Anchorage | 193 |
| RICHARDSON HIGHWAY | | | |
| | <i>Mile</i> | Palmer to Wasilla | 14 |
| Valdez | 0 | Palmer to Willow | 50 |
| Edgerton Cut-off | 92 | | |
| Copper Center | 102 | | |
| Glenallen | 116 | STEESE HIGHWAY | |
| Gulkana | 128 | | <i>Mile</i> |
| Paxsons | 191 | Fairbanks | 0 |
| Rapids | 233 | Fox | 11 |
| Big Delta | 280 | Chatanika | 27 |
| Fairbanks | 368 | Miller House | 115 |
| | | Central | 129 |
| | | Circle | 163 |
| ELLIOTT HIGHWAY | | | |
| | <i>Mile</i> | | |
| Fox | 0 | Central to | |
| Livengood | 70 | Circle Hot Springs | 8 |

TRAVEL COSTS

Approximate distance covered, time required, and expense involved in getting from Seattle to various representative places in Alaska:

| <i>Place</i> | <i>Miles</i> | <i>Days</i> | <i>Cost</i> |
|------------------|--------------|-------------|-------------|
| Anchorage | 1650 | 8 | \$ 95 |
| Bethel | 2000 | 15 | 180 * |
| Buckland | 3000 | 22 | 225 ** |
| Chitina | 1890 | 8 | 75 |
| Circle | 2500 | 7 | 125 ** |
| Copper Center | 1900 | 7 | 80 |
| Cordova | 1550 | 6 | 80 |
| Eagle | 2000 | 15 | 175 ** |
| Fairbanks | 2000 | 10 | 110 |
| Fort Yukon | 2600 | 19 | 125 ** |
| Haines | 1100 | 5 | 60 |
| Hooper Bay | 2000 | 20 | 200 ** |
| Juneau | 1000 | 3 | 55 |
| Kalskag | 2350 | 8 | 185 ** |
| Ketchikan | 750 | 3 | 40 |
| Kodiak | 1500 | 7 | 80 |
| Kotzebue | 3000 | 15 | 225 ** |
| Mountain Village | 3170 | 25 | 200 |
| Noatak | 3200 | 10 | 200 ** |
| Nome | 2600 | 10 | 190 ** |
| Nondalton | 2000 | 13 | 240 |
| Petersburg | 900 | 3 | 50 |
| Rampart | 2500 | 11 | 150 ** |
| Seward | 1590 | 7 | 85 |
| Shungnak | 3000 | 15 | 225 ** |
| Sitka | 1060 | 5 | 60 |
| Tanana | 2400 | 12 | 150 ** |
| Teller | 2500 | 10 | 100 |
| Umnak | 1500 | 12 | 140 |
| Unalakleet | 2500 | 14 | 190 ** |
| Unalaska | 1400 | 9 | 125 |
| Valdez | 1560 | 7 | 80 |
| Yakutat | 1200 | 6 | 70 |

These are pre-war minimum first-class fares by the route usually traveled in each case. A wartime surcharge and taxes increase steamship fares by about one-fourth.

* Via plane from Anchorage. About \$75 may be saved by going all the way by steamship from Seattle in summer.

** Via plane from Fairbanks. From \$100 to \$150 may be saved to Bering Sea points by traveling direct by steamship in summer.

CLIMATE

| | Jan. Aver. | Temperature (°F.) Jul. Aver. Maxi- mum | Mini- mum | Precipitation Ann'l (In.) | Days * | Killing Frosts Last in Spring | First in Fall | Growing Season (Days) | Cloudiness Clear (%) Cloudy (%) |
|--------------------------|---------------|--|--------------|------------------------------|--------|----------------------------------|------------------|-----------------------------|------------------------------------|
| Southeast: | | | | | | | | | |
| Juneau | 27.5 | 56.6 | 89 | 83.72 | 221 | Apr. 29 | Oct. 14 | 168 | 15.9 71.8 |
| Ketchikan | 32.6 | 57.5 | 96 | 150.58 | 296 | May 11 | Oct. 15 | 157 | 24.0 63.0 |
| Sitka | 32.4 | 54.9 | 87 | 87.43 | 216 | May 12 | Oct. 14 | 155 | 18.6 57.6 |
| Skagway | 21.1 | 57.7 | 92 | 26.40 | 115 | May 21 | Sep. 13 | 115 | 30.2 50.6 |
| Yakutat | 29.3 | 52.8 | 82 | 131.28 | 190 | May 20 | Oct. 2 | 135 | 25.0 59.4 |
| South-Central: | | | | | | | | | |
| Cordova | 27.2 | 54.8 | 87 | 147.48 | 212 | May 10 | Oct. 9 | 152 | 24.8 56.1 |
| Kodiak | 29.8 | 54.3 | 85 | 61.94 | 173 | May 12 | Oct. 11 | 152 | 20.4 50.7 |
| Seward | 22.4 | 55.3 | 88 | 67.74 | 146 | May 18 | Sep. 29 | 134 | 34.7 50.5 |
| Valdez | 19.1 | 53.3 | 84 | 60.50 | 171 | May 23 | Sep. 10 | 109 | 30.8 52.3 |
| Southern Valleys: | | | | | | | | | |
| Anchorage | 11.2 | 57.0 | 92 | 14.56 | 97 | May 23 | Sep. 13 | 113 | 24.1 48.6 |
| Homer | 16.1 | 54.6 | 79 | 32.59 | 120 | May 25 | Sep. 15 | 112 | 25.9 52.7 |
| Matanuska | 12.6 | 57.7 | 91 | 15.45 | 89 | May 26 | Sep. 11 | 108 | 31.2 39.9 |
| Southwest: | | | | | | | | | |
| Attu | 32.4 | 49.6 | 71 | 73.74 | 178 | | | ... | 26.3 46.6 |
| Dutch Harbor | 32.2 | 51.3 | 80 | 58.61 | 222 | May 20 | Oct. 10 | 143 | 10.8 65.2 |
| Bering Sea: | | | | | | | | | |
| Bethel | 8.3 | 54.5 | 90 | 17.68 | 130 | May 23 | Sep. 3 | 102 | 27.4 50.6 |
| Dillingham | 8.4 | 53.6 | 89 | 25.80 | 126 | | | ... | 49.2 49.2 |
| Nome | 3.4 | 49.8 | 84 | 17.26 | 121 | June 19 | Aug. 10 | 52 | 35.1 50.3 |
| Arctic Coast: | | | | | | | | | |
| Barrow | -17.0 | 40.2 | 78 | 4.23 | 54 | July 4 | July 21 | 17 | 20.8 46.6 |
| Kotzebue | -9.2 | 52.4 | 82 | 6.15 | 45 | June 13 | Sep. 14 | 93 | 36.3 42.8 |
| Interior: | | | | | | | | | |
| Fairbanks | -11.6 | 60.0 | 99 | 11.71 | 111 | May 24 | Aug. 28 | 96 | 23.2 51.3 |
| Fort Yukon | -21.6 | 61.2 | 100 | 6.67 | 58 | June 1 | Aug. 21 | 81 | 43.7 37.4 |
| McKinley Park | 1.9 | 54.3 | 89 | 15.03 | 69 | June 9 | Aug. 11 | 63 | 38.9 35.2 |
| Nenana | -11.5 | 60.8 | 98 | 10.02 | 65 | May 22 | Aug. 26 | 96 | 38.6 41.3 |
| Tanana | -19.7 | 55.4 | 90 | 13.28 | 109 | June 6 | Aug. 15 | 70 | 34.4 36.1 |
| Wiseman | -21.4 | 55.2 | 89 | 8.32 | 68 | | | ... | 38.9 35.7 |

* Mean number of days with .01 inch precipitation or more.

LENGTH OF DAY

Hours and minutes of possible sunshine, or time from sunrise to sunset, on the first day of each month at given latitudes

| <i>Lat.</i> | <i>Jan.</i> | <i>Feb.</i> | <i>Mar.</i> | <i>Apr.</i> | <i>May</i> | <i>June</i> | <i>July</i> | <i>Aug.</i> | <i>Sept.</i> | <i>Oct.</i> | <i>Nov.</i> | <i>Dec.</i> |
|-------------|-------------|-------------|-------------|-------------|------------|-------------|-------------|-------------|--------------|-------------|-------------|-------------|
| 54° | 7:30 | 8:51 | 10:46 | 13:00 | 15:05 | 16:47 | 17:07 | 15:51 | 13:48 | 11:41 | 9:29 | 7:52 |
| 56° | 7:05 | 8:34 | 10:40 | 13:04 | 15:19 | 17:13 | 17:34 | 16:10 | 13:56 | 11:38 | 9:17 | 7:29 |
| 58° | 6:37 | 8:16 | 10:33 | 13:10 | 15:37 | 17:41 | 18:08 | 16:32 | 14:06 | 11:35 | 9:02 | 7:03 |
| 60° | 6:03 | 7:57 | 10:26 | 13:16 | 15:57 | 18:18 | 18:48 | 16:57 | 14:16 | 11:34 | 8:48 | 6:33 |
| 62° | 5:21 | 7:33 | 10:19 | 13:22 | 16:19 | 19:03 | 19:40 | 17:27 | 14:25 | 11:30 | 8:29 | 5:58 |
| 64° | 4:28 | 7:03 | 10:07 | 13:29 | 16:45 | 20:05 | 20:57 | 18:04 | 14:41 | 11:28 | 8:08 | 5:13 |
| 66° | 3:13 | 6:30 | 9:56 | 13:37 | 17:16 | 21:36 | (1) | 18:51 | 14:56 | 11:24 | 7:44 | 4:14 |
| 68° | (2) | 5:48 | 9:42 | 13:46 | 17:56 | (3) | (3) | 19:56 | 15:03 | 11:19 | 7:14 | 2:40 |
| 70° | (4) | 4:50 | 9:26 | 13:59 | 18:51 | (5) | (5) | 21:45 | 15:38 | 11:17 | 6:37 | (4) |
| 72° | (6) | 3:20 | 9:07 | 14:12 | 20:08 | (7) | (7) | (7) | 16:07 | 11:12 | 5:48 | (6) |

1 Sun does not set between June 11 and July 1; 21 days.

2 Sun does not rise between December 11 and January 2; 23 days.

3 Sun does not set between May 26 and July 18; 54 days.

4 Sun does not rise between November 27 and January 16; 51 days.

5 Sun does not set between May 16 and July 27; 73 days.

6 Sun does not rise between November 18 and January 25; 69 days.

7 Sun does not set between May 9 and August 4; 88 days.

Dutch Harbor is at about 54°; Ketchikan about 55°; Juneau and Kodiak about 58°; Skagway, Homer and Yakutat about 59°; Seward and Cordova about 60°; Anchorage, Valdez, and Bethel about 61°; Matanuska-Susitna valleys about 62°; McGrath about 63°; Tanana Crossing and McKinley Park about 64°; Nome, Fairbanks, Ruby and Teller, about 65°; Fort Yukon and Kotzebue about 67°; Point Hope about 68°; Barrow almost 72°.

WHAT TO READ, AND WHERE TO WRITE, FOR FURTHER INFORMATION ABOUT ALASKA

THE late Judge James Wickersham's *Bibliography of Alaskan Literature* lists many thousands of books, pamphlets and articles about Alaska which appeared in print up to 1924. Since that time the tide of publications has been rising. A full, or even an extensive, reading list is less likely to prove helpful than a small and selective one. The following are offered as perhaps the ten best books on Alaska:

- Merle Colby, *A Guide to Alaska*, Macmillan, 1939. (Placed first because it probably comes closest to telling the whole story about the Alaska of just before the war; much valuable information; good photographs; beautifully written; one of the best in the Federal Writers' Project "American Guide" series.)
- National Resources Committee, *Alaska: Its Resources and Development*, Government Printing Office, 1937. (The group of staff reports included in this government publication constitute the "bible" of technical information about Alaska resources; out of print, but probably available in your public library.)
- Alaska Planning Council, *General Information Regarding Alaska*, Juneau, 1941. (Out of print, unfortunately.)
- W. H. Dall, *Alaska and Its Resources*, Lee & Shepard, 1870. (One of the classics of Alaska resource literature, by the director of scientific investigations for the Russian-American Telegraph Company; much of its information has stood up surprisingly well under the test of time; long out of print, but try your library.)
- H. H. Bancroft, *History of Alaska, 1730-1885*, Bancroft Co., 1886. (Another old-time classic, which has become a collector's item in recent years; most of it actually written by Ivan Petrov, who conducted the first Alaska census for the United States; out of print.)
- Clarence L. Andrews, *The Story of Alaska*, Caxton Printers, 1936. (A modern history, with some other information besides.)

Jean Potter, *Alaska Under Arms*, Macmillan, 1942. (The story, exceedingly well told, of the war's repercussions on the Territory; sound information and good reading.)

Jeannette P. Nichols, *Alaska, A History of Its Administration, Exploitation, and Industrial Development During Its First Half Century Under the Rule of the United States*, Clark, 1924. (A scholarly study of Alaska government, its criticisms still—alas—cogent in this late day.)

Annual Report of the Governor of Alaska, Government Printing Office. (Issued every year; a brief report on general progress in the Territory and particularly on the activities of government agencies there.)

Ernest P. Walker, *Alaska: America's Continental Frontier Outpost*, Smithsonian Institution, 1943. (In the Institution's "War Background Studies" series; very good brief study; excellent photographs.)

Good reports are available from various government agencies on special fields of interest.

On land settlement:

General Land Office, *Information Relative to the Disposal and Leasing of Public Lands in Alaska*, 1939.

General Land Office, *Answers to Questions by Servicemen About Land Settlement in Alaska*, 1944.

On agriculture:

Division of Territories and Island Possessions, *Agriculture in the Matanuska Valley, Alaska*, by Herbert C. Hanson, n.d. (circa 1944). The bulletins and circulars of the Alaska Agricultural Experiment Station, College, Alaska.

On mining:

Geological Survey, *Mineral Industry in Alaska*, issued annually, by Philip S. Smith.

On fishing:

Fish and Wildlife Service, *Alaska Fishery and Fur Seal Industries*, issued annually, by Ward T. Bower.

On forestry:

Forest Service, *Opportunities for Minor Wood Product Industries in Alaska*, by Alva W. Blackerby, 1945.

The 1945 Territorial Legislature created an Alaska Development Board, with offices at Juneau, one of whose duties will be to answer the questions of persons interested in opportunities in the Territory. Answers to specific questions in their respective fields, and sometimes general information about Alaska, may be obtained from the government agencies having offices in the Territory. Most of these agencies have headquarters at Juneau, but consult the following list for addresses:

General Land Office—Fairbanks, Anchorage, Nome, or Washington, D.C.

Public Survey Office—Juneau

Governor of Alaska—Juneau

U.S. Forest Service—Juneau

Alaskan Fire Control Service—Anchorage

Alaska Road Commission—Juneau

Public Roads Administration—Juneau

Territorial Highway Engineer—Juneau

U.S. Customs Service—Juneau

Immigration and Naturalization Service—Ketchikan

Fish and Wildlife Service—Juneau

University of Alaska—College

U.S. Coast Guard—Ketchikan

Alaska Native Service—Juneau

U.S. Bureau of Mines—Juneau

Territorial Commissioner of Mines—Juneau

Territorial Commissioner of Education—Juneau

U.S. Weather Bureau—Anchorage
Alaska Rural Rehabilitation Corporation—Palmer
U.S. Geological Survey—Washington, D.C.
National Park Service—McKinley Park
Alaska Railroad—Anchorage
Territorial Commissioner of Health—Juneau
U.S. Veterans' Bureau—Juneau

There are other government agencies with offices in Alaska, many of them, but the list above includes most of those to which questions about opportunities of one kind or another might be addressed.

INDEX

- Abalone, 128
 Absentee ownership, 58-59, 121, 187, 196
 Accountancy, Territorial Board of, 180
 Adak Island, 247, 248
 Admiralty Island, 31, 223
 Advertising agencies, 178
 Afognak, 70, 245
 Afognak Island, 243, 244
 Agattu Island, 247
 Agricultural Economics, Bureau of, 94
 Agricultural experiment stations, 76, 92-93, 95, 100, 111, 264, 267, 285
 Agricultural Extension Service, 101, 107, 109
 Agriculture, 11, 57, 76-109, 266, 268, 272, 273, 285
Agriculture in the Matanuska Valley, Alaska, 285
 Agriculture, Territorial Department of, 101
 Agriculture, U.S. Department of, 106, 109
 Air freighting, 167-170, 211
 Airplanes, 150, 157, 167, 168, 169, 170, 171, 224
 Airplane spruce, 72
 Airports, 170
 Air transportation, 96, 166-170
 Airway to Asia, 28, 166-169, 255, 265
 Akiachak, 253
 Akiak, 253
 Aklavik, 275
 Akulurak, 253
 Akun Island, 247, 248
 Akutan, 248
 Akutan Island, 247
Alaska, A History of Its Administration, etc., 285
Alaska: America's Continental Frontier Outpost, 285
Alaska and Its Resources, 284
 Alaska Airlines, 169
 Alaska Communication System, 194
 Alaska Development Board, viii, 286
Alaska Fishery and Fur Seal Industries, 286
 Alaska Game Commission, 151
 Alaska Highway (see Highway, Alaska)
 Alaska Highway Traffic Control Board, 213
Alaska, Its Resources and Development, 98, 284
 Alaska Juneau Gold Mining Company, 133, 135, 136, 227
 Alaska Merit System, 180
 Alaska Native Service, 145, 200, 203, 237, 256, 286
 Alaska Peninsula, 13, 19, 28, 29, 30, 31, 39, 49, 60, 129, 140, 147, 212, 219, 245-247
 Alaska Planning Council, 99, 284
 Alaska Railroad, 29, 62, 72, 81, 86, 113, 144, 156, 158-160, 165, 235-238, 240, 252, 261, 264, 266, 278, 287
 Alaska Range, 28, 31, 44, 91, 116, 238, 251, 260
 Alaska Road Commission, 155, 268, 286
 Alaska Rural Rehabilitation Corporation, 89, 91, 101, 104-105, 287
 Alaska Steamship Company, 107, 165
Alaska Under Arms, 285
 Alaskan Fire Control Service, 286
 Alatna, 264
 Alberta, 271, 272, 273, 274, 275, 276
 Aleknagik, 250
 Aleutian Islands, 13, 14, 15, 17, 25, 27, 28, 30, 37, 39, 49, 53, 62, 115-116, 127, 140, 169, 212, 247-249
 Aleutian Livestock Company, 115-116
 Aleuts, 49, 248, 249, 253
 Alexander Archipelago, 222-223, 230
 Alitak, 245
 Alek Valley, 273
 Amatignak Island, 15
 Amchitka Island, 247
 Amlia Island, 247
 Amukta Island, 247
 Amusement places, 178

- Anchorage, 16, 17, 19, 38, 39, 51, 70, 87, 89, 91, 93, 96, 101, 102, 142, 145, 154, 161, 165, 169, 170, 173, 178, 179, 193, 194, 195, 198, 202, 206, 208, 209, 227, 236-237, 278, 280, 281, 282, 283
 Anderson, Dr. J. P., 31
 Anderson, I. M. C., 115
 Andreanof Islands, 247
 Andrews, Clarence L., 284
 Angoon, 229
 Aniak, 253
 Annette Island, 229
Answers to Questions by Servicemen About Land Settlement in Alaska, 285
 Antimony, 138, 139
 Anvik, 265
 Apartments, 209
 Apparel stores, 177
 Arctic Circle, 18, 36, 270
 Arctic Ocean, 13, 17, 19, 23, 32, 39, 49, 110, 131, 254, 257, 258
 Arctic Slope, 19, 37, 41, 44, 143, 146, 257-258, 282
 Area of Alaska, 16
 Army, 9, 27, 29, 144-145, 155, 168, 194, 199, 212, 224, 267, 268, 275
 Asbestos, 140-141
 Asia, 14-15, 166, 167, 254
 Athabaska Lake, 272
 Athabaska oil sands, 275
 Athabaska River, 271
 Athapaskan Indians, 49, 254, 261
 Atka, 248
 Atka Island, 247
 Attorney General, Territorial, 197
 Attu, 14, 16, 39, 62, 248, 249, 282
 Attu Island, 247
 Auditor, Territorial, 187, 197
 Auto camps, 173, 174
 Automobile ferry opportunity, 158, 161, 224
 Automobiles, 178, 192-193
 Automobile services, 11, 179
 Aviation, 5, 12, 28, 96, 99, 150, 157, 166-171, 211, 224, 231, 252, 255, 265, 267; services and repair, 11, 171, 179
 Barbers, 178
 Barrow, 41, 42, 43, 145, 258, 282, 283
 Base metals, 139-140
 Bear, Mount, 29
 Bears, 31, 33, 114, 150, 244, 246, 257
 Beaver, 149
 Beaver (town), 264
 Bee keeping, 97-98
 Belkofski, 247
 Bering River, 56, 185; coal field, 143, 145, 219, 232
 Bering Sea, 13, 15, 17, 18, 19, 27, 32, 37, 39, 49, 55, 110, 129, 130, 248, 250-254, 282
 Bering Strait, 10, 15, 53, 254, 258
 Bering, Vitus, vii
 Berries, 108, 183-184
 Bethel, 30, 168, 193, 252, 253, 254, 268, 281, 282, 283
Bibliography of Alaskan Literature, 284
 Big Delta, 40, 113, 267, 269, 280
 Birds, 32, 33
 Blackburn, Mount, 29
 Black Rapids Glacier, 269
 Boating, boatbuilding and boat repair, 186, 225
 Bona, Mount, 29
 Bookkeepers, 179
 Books about Alaska, 284-285
 Bookstores, 177
 Boundary, Alaska-Canada, 23-24, 110
 Bounty payments, 32-33, 149-150, 250
 Bower, Ward T., 286
 Bridges, 155, 160, 239
 Bristol Bay, 61, 119, 121, 122, 249-250
 British Columbia, 18, 24-25, 126, 138, 141, 161, 162, 164, 225, 228, 271, 272, 273, 274, 275, 277
 Brooks, Dr. Alfred H., 21
 Brooks Range, 28, 30, 31, 251, 257
 Buckland, 256, 281
 Buffalo, 32, 267
 Buldir Island, 247
 Business colleges, needed in Alaska, 178
 Business, difficulties of conducting in Alaska, 176
 Bus services, 163, 165, 179
 Butter, 82, 96
 Cabbage, 82, 90, 97
 Calder, 140

Bancroft, H. H., 284

Banks, 176, 177, 197, 205

Baranof Island, 37, 139, 223

- Canada, 9, 13, 15, 18, 23, 24-25, 56, 126, 138, 141, 145, 153, 161, 162, 164, 173, 225, 228, 259, 261, 271-277
- Canadian National Railway, 160, 162
- Candle, 256
- Canol pipe line, 3, 25, 62, 145-146, 153, 161, 166, 266, 271, 275
- Canol Road, 213, 274
- Cantwell, 238
- Cape Lisburne coal field, 143
- Cape Ommaney, 229
- Cape Prince of Wales, 254
- Cape Simpson, 146
- Cape Spencer, 250, 231
- Capital, how much required, 107-108, 186
- Carcross, Y. T., 280
- Caribou, 32, 260
- Carpenters, 154
- Cattle, 34, 90, 110, 111, 112, 113, 115
- Cenotaph Island, 231
- Chambers of Commerce, 11, 199, 211
- Chandalar River, 263
- Chanega, 236
- Chaneliak, 253
- Chatanika, 269, 280
- Chena River, 266
- Chena Slough, 266
- Chernofski, 249
- Chichagof Island, 140, 223*
- Chicken (town), 264
- Chignik, 247
- Chilkat Range, 38
- Chilkoot Barracks, 228
- Chilkoot Valley, 228
- Chinese, in Alaska population, 50
- Chirikof Cattle Company, 112
- Chirikof Island, 110, 111, 112
- Chiropractic Examiners, Territorial Board of, 180
- Chistochina, 269
- Chitina, 193, 234, 268, 269, 280, 281
- Chitina River, 185
- Christmas trees, 97
- Chromite, 136, 138-139, 142, 239
- Chugach Mountains, 89, 241
- Chugach National Forest, 67, 232, 234, 240, 244
- Chuginadak Island, 247
- Chukchi Peninsula, 254
- Churches, 202
- Circle, 56, 193, 262, 269, 270, 280, 281
- Circle Hot Springs, 40, 270, 280
- Civil Aeronautics Administration, 170
- Civil Service Commission, 153
- Clams, 127-128
- Clark, Lake, 243
- Clark's Point, 250
- Clearing methods, 94
- Climate, 18, 36-47, 84-85, 87-89, 92, 170, 282
- Clothing, 205
- Cloudiness, 38, 40, 46-47, 88, 282
- Coal, 56, 138, 142-145, 219-220, 239, 246, 252, 257, 260, 274-275; leases, 219-220; prospecting permits, 220
- Coast and Geodetic Survey, 17
- Coast Guard, 226, 286
- Coastline, length of, 17
- Coast Range, 23, 26, 28, 222-223, 224
- Codfish, 55, 127, 131, 246
- Cold, Alaska attitude toward, 40; in winter of 1942-43, 46
- Cold Bay oil field, 147
- Cold storage plants, 123, 124, 154, 227, 230
- College, 45, 84, 95, 142, 181, 201, 267
- Colorado Creek, 264
- Columbia Glacier, 233
- Colville River, 19
- Commerce, 59-60
- "Concentration" in the canned salmon industry, 121-122
- Congress, 9, 61, 134, 187, 197, 199, 226, 238
- Construction, 61-62, 153-156, 178; cost of, 208-209
- Continental shelf, 17
- Contractors, 156, 178
- Controller Bay, 230
- Cook, Capt. James, 242
- Cook Inlet, 17, 19, 29, 53, 60, 69, 87, 111, 113, 239, 242-243; coal field, 219
- Copper, 57, 132, 137
- Copper Center, 38, 100, 193, 269, 280, 281
- Copper River, 18, 69, 185, 230, 232, 269; flats, 234
- Copper River Valley, 44, 78, 79, 138
- Copper River and Northwestern Railroad, 234, 268-269
- Cordova, 16, 38, 51, 70, 127, 154, 155,

Cordova (*continued*)

193, 194, 195, 202, 206, 208, 209, 230,
234, 235, 279, 281, 282, 283
Corporations, registry of in Alaska, 187
Corps of Engineers, 156, 160
Cosmetology, Territorial Board of, 180
Cost of living, 77, 95, 176, 180, 205-211
Council, 256
Courts, 198, 235
Coyotes, 32-33, 149-150
Crab fishery, 128-129, 131, 227
Craig, 70, 71, 123, 229
Cranberries, 183-184
Cripple, 264
Crop yields per acre, 86, 90
Curry, 238
Customs Service, 286
Cut-off, 264
Cutworms, 109

Dairying, 11, 79, 89, 95, 97

Dall Island, 140

Dall, W. H., 284

Dawson, Y. T., 24, 261, 276

Dawson Creek, B. C., 161, 162, 163, 164,
280

Dayville, 70

Deer, 32

Deering, 256

Delegate to Congress, 197, 199

Dental Examiners, Territorial Board of,
180

Dentists, 180, 202

Depth of waters surrounding Alaska, 17

Dillingham, 250, 282

Diomedes, 256

Diomedes Islands, 15, 254

Distances, 14, 278-280, 281

Division of Territories and Island Pos-
sessions, 11, 285

Dixon Entrance, 17, 23

Doctors, 179, 202

Dogfish, 130-131

Douglas, 228

Douglas Island, 223

Dredges, mining, 136, 137, 138, 256, 260,
266

Ducks, 32, 234

Dunbar, 113

Dutch Harbor, 16, 19, 39, 168, 248, 249,
282, 283

Eagle (town), 193, 261, 264, 281

Eagles, 33

Eating places, 178

Economy of Alaska, 53-63

Edgumbe, Mount, 229

Edgerton Cut-off, 269, 280

Edmonton, Alta., 28, 162, 163, 164, 171

Education, Territorial Commissioner of,
286

Eek, 253

Egegik, 250

Egegik River, 249

Eggs, 80, 82, 86, 96, 97

Eklutna, 237, 278

Ekwak, 250

Elections, 197-198

Elfin Cove, 156

Elim, 256

Elk, 32, 244-245

Elliott Highway, 266, 269, 280

Employment Service, U.S., 153, 179

Engineers' and Architects' Examiners,
Territorial Board of, 180

Erosion, 85, 102-103

Eska, 237, 242

Eskimos, 49, 61, 117, 250, 251, 252, 253,
254, 256, 257, 258

Eureka, 269

Eyak, 236

Fairbanks, 5, 11, 16, 27, 29, 34, 36, 39,
40, 42, 43, 51, 70, 84, 86, 87, 96, 97, 98,
100, 102, 103, 136, 137, 138, 144, 146,
154, 155, 159, 161, 163, 165, 166, 168,
169, 170, 171, 173, 176, 177, 178, 186,
193, 194, 195, 198, 202, 206, 208, 209,
227, 266, 267, 268, 269, 278, 280, 281,
282, 283

Fairweather, Mount, 29, 231

Fairweather Range, 231

False Pass, 249

Farm equipment, what to bring, 107-108

Farm, how to establish in Alaska, 107

Farming, 61, 76-109, 270

Farm Security Administration, 101, 115

Federal Housing Administration, 208

Federal Power Commission, 217

Federal Public Housing Authority, 209

Filipinos, 50

Finlay River, 273

- Fish and Wildlife Service, 127, 129, 130, 286
- Fisheries, 55, 60-61, 118-131, 286; by-products, 122-123, 131; wastes, 122-123, 131
- Fisheries Experimental Laboratory, 131
- Fishing, sport, 150, 174, 240, 273
- Fish leather, 123
- Fish meal, 97, 123, 125
- Fish traps, 120-121
- Flat, 265
- Florists, 176
- Folger, 264
- Food prices, 176, 209-210
- Foraker, Mount, 29
- Forest industries, 67-75, 286
- Forests, 23, 28, 30, 67-69, 94, 224-225, 233-234, 244, 255, 259-260, 266, 272, 273
- Forest Service, 71, 72, 73, 74, 226, 286
- Fort Nelson, B.C., 171, 273, 275, 280
- Fort Norman, N.W.T., 275
- Fort St. John, B.C., 213, 273, 280
- Fort Smith, Alta., 276
- Fortymile, 56
- Fortymile River, 264
- Fort Yukon, 18, 40, 193, 202, 260, 261, 264, 281, 282, 283
- Fox (town), 269, 280
- Foxes, 149, 151, 253, 257
- Fox Islands, 247
- Franklin, 264
- Fruits, 108
- Fumaroles, 246
- Furbearers, 32, 148-152, 256, 260, 273
- Fur farming, 100, 151-152, 216, 227, 260
- Fur processing, 184, 253
- Furs, 54-55, 148-152, 184, 253, 256, 257, 260, 273
- Fur seals, 54-55, 149, 252-253
- Fur trade, 53
- Gakona, 193, 269, 280
- Galena, 263, 264
- Gambell, 253
- Gannett, Henry, 172
- Gareloi Island, 247
- Gasoline, no rationing of, 193; price of, 166
- Gastineau Channel, 156, 228
- General Information Regarding Alaska*, 284
- General Land Office, 93, 104, 105, 159, 214-217, 236, 285, 286
- Geological Survey, 22, 133, 138, 139, 144, 172, 285, 287
- Gill netting, 121, 131, 249-250
- Glacier Bay National Monument, 114, 225-226, 230, 232
- Glacier Highway, 228
- Glaciers, 20-21, 24, 31, 225, 231, 233, 269
- Glenallen, 269, 280
- Glenn Highway, 161, 165, 193, 235, 237, 269, 280
- Goat, mountain, 31
- Goddard Hot Springs, 204
- Gold, discovery along Alaska Highway, 274; importance in Alaska economy, 56-57, 132, 135, 260; lodes, 133, 135-137, 218; placer, 133, 135-137, 218, 254, 260, 265-266; price of, 133, 134; reserves remaining in Alaska, 133; taxation of production, 196
- Gold production, 56, 57-58, 60, 132-137, 260
- Gold Rush, 24, 132, 228, 254, 276
- Golovnin, 131, 256
- Goodnews Bay, 138, 252, 254
- Goodnews Bay Mining Company, 138
- Goodpaster River, 83-84, 112
- Goose Bay, 243
- Government, 54, 57, 155, 180, 196-200, 285; assistance to agricultural development, 98-102; assistance to manufacturing, 186-187
- Governor of Alaska, 197, 285, 286
- Grass-land areas, 30, 244, 245
- Grazing season, 111, 112, 113, 114
- Great Bear Lake, 272, 274
- Great Plains of the North, 25, 271-272
- Great Sitkin Island, 247
- Great Slave Lake, 272, 275
- Grocery stores, 176
- Ground fish, 124, 129-130
- Grouse, 32, 149
- Growing season, 36, 38, 39, 40, 42, 44-45, 83, 84, 87-88, 92, 282
- Gruening, Gov. Ernest, 58; foreword by, vii-viii
- Guides, 150
- Guide to Alaska, A*, 284

- Gulf of Alaska, 130, 230-232
 Gulkana, 193, 269, 280
 Gustavus, 114, 229
 Gypsum, 140
- Haidan Indians, 49
 Haines, 16, 24, 158, 161, 193, 202, 223, 224, 228, 279, 280, 281
 Haines Cut-off, 161, 165, 193, 223, 280
 Hair seals, 33, 149, 257
 Halibut, cheeks, 123-124; fishery, 55, 60, 123-124; how caught, 123; how prepared, 123; length of season, 124; regulation of fishery, 124; size of, 123; where caught, 123, 131
 Hanson, Herbert C., 285
 Harbors, 222, 248, 249; freedom of from freezing, 19; improvement projects, 156
 Hares, 32, 149
 Hay, 79, 80, 90-91, 92
 Haycock, 256
 Hay fever, 34
 Hay River, 273
 Health conditions, 203-204
 Health, Territorial Department of, 46, 202-203, 287
 Healy, 116, 156, 238
 Healy River coal field, 144, 260
 Heating costs, 208
 Herbert Island, 247
 Herring, abundance of, 127; canning of, 126; fishery, 55, 61, 124-127; how caught, 126; how prepared, 125-127; Scotch-curing of, 125-126; size and value of catch, 124-125
 Highway, Alaska, 3, 11, 24, 25, 27-28, 29, 34, 62, 96, 103, 115, 153, 155, 158, 161-166, 171, 173-174, 193, 213-214, 223-224, 235, 264, 266, 267, 269, 271, 273, 274, 276, 280
 Highway Engineer, Territorial, 155-156, 197, 286
 Highway routes to Alaska, 27-28
 Highways, 27, 155-156, 157, 161-166, 192-193, 223-224, 226, 234, 264, 266, 268-270, 280
History of Alaska, 1730-1885, 284
 Hog raising, 89, 97
 Holikachuk, 265
 Holy Cross, 253
 Homer, 38, 92, 93, 98, 102, 113, 129, 169, 239, 240, 282, 283
 Homesteading, 103-104, 214-216, 285
 Hoonah, 229
 Hooper Bay, 253, 281
 Hope, 93, 240
 Hospitals, 102, 155, 202-204
 Hotels, 11, 172
 Hot springs, 218, 270
 Hot Springs (town), 267
 Housing, 11, 154, 208-209
 Hubbard, Mount, 29, 231
 Hughes, 264
 Hunter, Mount, 29
 Hunting, 34, 148-150, 174, 184, 240, 273
 Hydaburg, 229
 Hyder, 70, 138, 223, 229
 Hydroelectric power resources, 74, 155, 185, 217, 272
- "Icebergs," 20
 Ice fields, 20
 Icy Bay, 230, 231
 Icy Strait, 225, 229
 Iditarod, 56, 265
 Iditarod River, 265
 Igloo, 256
 Iliamna, 243
 Iliamna Lake, 243
 Iliamna, Mount, 29
 Immigration and Naturalization Service, 286
 Indians, 49, 61, 254
Information Relative to the Disposal and Leasing of Public Lands in Alaska, 285
 Inskin Bay oil field, 147, 246
 Innoko River, 56, 263, 265
 Inside Passage, 16, 23, 26, 62, 158, 161, 174, 227
 Insurance agents, 178
 Interest rates, 205
 Interior Alaska, 16, 18, 20, 24, 30, 33, 37, 39-40, 45, 67, 69, 115, 143, 155, 158, 223, 259-270, 282
 Interior, Department of, 11, 99, 101, 199, 219, 225
 International Date Line, 14
 International Polar Expedition, 109
 Iodine, 183
 Iron, 139, 274

- Isolation of Alaska communities, 4, 191-194
- Jack Wade, 264
- Jakalof Bay, 142
- Japan, 14, 15, 18, 128, 253
- Japan Current, 18
- Japanese in Alaska population, 50, 178, 213
- Japanese incursion on Alaska fisheries, 129
- Japanese invasion of and expulsion from Alaska, 9, 25, 27, 62, 161, 163, 247, 248, 249, 253
- Jonesville, 237, 242
- Juneau, 15, 16, 18, 21, 34, 37, 38, 42, 43, 45, 51, 56, 70, 79, 81, 136, 154, 158, 168, 169, 170, 174, 176, 178, 192, 193, 194, 195, 198, 202, 206, 208, 209, 221, 222, 223, 227-228, 279, 281, 282, 283
- Justice, Department of, 199
- Kachemak Bay, 91, 113, 239
- Kagamil Island, 247
- Kaiser, Henry, 140
- Kake, 229
- Kalsin Bay, 110
- Kalskag, 253, 281
- Kaltag, 265
- Kamchatka Peninsula, 14
- Kanaga Island, 247
- Kanakanak, 250
- Kanatak, 247
- Kantishna, 138
- Karluk, 245
- Karluk River, 244
- Kasaan Peninsula, 138, 139
- Kashega, 249
- Kasilof, 240
- Kasilof River, 91, 239
- Katalla, 232; oil field, 147, 219, 232
- Katalla-Yakataga oil reserve, 219, 232
- Katmai, Mount, 30, 245, 246
- Katmai National Monument, 246
- Kelp "pickles," 183
- Kenai, 92, 93, 100, 102, 110, 111, 239, 240
- Kenai Lake, 93, 239
- Kenai Mountains, 236
- Kenai National Moose Range, 91, 104, 240
- Kenai Peninsula, 16, 31, 78, 91-93, 100, 104, 113, 136, 138-139, 238-241
- Kenai River, 91, 185, 239, 240
- Kennecott Copper Company, 132, 137, 269, 274
- Ketchikan, 15, 16, 36, 37, 38, 51, 70, 72, 73-74, 75, 117, 123, 128, 131, 139, 142, 154, 155, 158, 169, 176, 178, 181, 186, 192, 194, 195, 198, 202, 205, 206, 208, 209, 223, 226, 279, 281, 282, 283
- Kiana, 258
- Kimshan Cove, 70
- King Cove, 247
- Kipnuk, 253
- Kiska, 247, 248
- Kivalina, 258
- Klawock, 70, 229
- Klondike, 24, 56
- Kluane Lake, 223
- Klutina River, 185
- Knik, 243
- Knik Arm, 87, 236, 241, 242
- Kobe, 160
- Kobuk, 258
- Kobuk River, 19, 140
- Kodiak, 16, 39, 53, 70, 100, 110, 111, 124, 129, 193, 194, 202, 244, 245, 279, 281, 282, 283
- Kodiak Island, 30, 31, 49, 60, 92, 111, 112, 113-114, 123, 126, 127, 243-245
- Komandorski Islands, 14
- Kotsina River, 185
- Kotzebue, 258, 281, 282, 283
- Kotzebue Sound, 254, 257, 258
- Koyuk, 256
- Koyukuk, 264
- Koyukuk River, 263, 264-265
- Kurile Islands, 14, 62
- Kuro-siwo, 18
- Kuskokwim River, 18, 28, 31, 102, 251, 252, 253, 254, 259, 267-268
- Kuskokwim Valley, 40, 69, 78, 79, 138, 250, 253, 267-268
- Kuskulana River, 185
- Kvichak River, 249
- Kwethluk, 253
- Kwigillingok, 253
- Kwinhagak, 253
- Labor Commissioner, Territorial, 197
- Labor Statistics, Bureau of, 206

- Ladd Field bombing range, 214
 Ladue River, 161
 Land classification, 99, 104
 Land withdrawals, 103-104, 114, 174,
 213-214, 257, 267
 LaPerouse, 231
 Larsen Bay, 245
 Lathrop, Austin B., 142
 Latitudes, 283; comparative with Eu-
 rope, 15-16
 Latouche, 70, 87, 236
 Laundries, 154, 178
 Law Examiners, Territorial Board of,
 180
 Lawing, 240
 Lawyers, 179-180
 Lead, 138
 Legislature, viii, 33, 101, 103, 181, 194,
 195, 196, 197-198, 199, 202, 204, 205,
 207, 250, 286
 Levelock, 250
 Liard River, 271, 280
 Library facilities, 202
 Limestone, 139-140, 274
 Lions Clubs, 211
 Liquor stores, 177
 Lisianski Inlet, 230
 Little Port Walter, 37, 46
 Little Sitkin Island, 247
 Little Susitna River, 185
 Lituya Bay, 230, 231
 Livengood, 193, 269, 280
 Livestock raising, 11, 34, 89, 90, 92, 97,
 110-117, 164, 216-217
 Living conditions in Alaska, 191-211
 Lodges, 211
 Logan, Mount, 25, 231
 Logging, 61, 70-71, 72
 Long Creek, 264
 Long day in summer, 42-44, 84, 88-89,
 283
 Lost River, 231
 Lumber production, 70, 71, 72
 Lynn Canal, 38, 223, 228
 Lynx, 149, 151-152

 Mackenzie Mountains, 28, 275
 Mackenzie River, 145, 271, 272, 275
 Mail-order offices, 177
 Mail service, 194
 Malaspina Glacier, 231
 Marble, 57, 140
 Maritime Commission, 176
 Market for farm products, 95-97
 Markups, retail, 176
 Marshall, 252, 254, 261
 Marten, 149, 151-152
 Massacre Bay, 248
 Matanuska, 38, 87, 88, 100, 237, 242, 278,
 282
 Matanuska coal field, 138, 143-145, 219,
 236
 Matanuska colony, 89, 94, 98, 101, 103,
 105-106, 170, 241
 Matanuska Electric Association, 242
 Matanuska River, 18
 Matanuska Valley, 16, 43, 44, 56, 78, 81,
 87-91, 94, 98, 99, 103, 104, 105, 112,
 116, 186, 193, 241-242, 283
 Matanuska Valley Farmers Cooperating
 Association, 82, 91, 98, 105
 Mattress factories, 186
 Maverick, Maurry, 174, 187
 McCarthy, 269
 McGrath, 170, 268, 283
 McKinley, Mount, 28-29, 231
 McKinley Park (station), 238, 278, 282,
 283
 McMurray, Alta., 276
 Meade River, 145
 Meat markets, 176
 Meat production in Alaska, 80, 81, 82,
 96, 111, 112, 115, 116
 Medfra, 268
 Medical Examiners, Territorial Board
 of, 180
 Mekoryuk, 253
 Mendenhall Glacier, 21
 Mentasta, 269
 Mercury, 138, 142
 Metals Reserve Company, 142
 Metlakatla, 70, 71, 156, 229
 Milk, 80, 82, 86, 89, 97
 Miller House, 270, 280
Mineral Industry in Alaska, 285
 Mineral production of Alaska, 132
 Mineral resources, 57, 132-147, 239, 268,
 272-276
 Mineral springs, 174, 218, 270
 Mines, Bureau of, 138, 145, 286
 Mines, Territorial Commissioner of,
 286

- Mining, 11, 56, 60, 61, 132-145, 218, 227, 256, 260, 266, 285, 286; mining claims, 142, 218
- Mink, 149, 151-152
- Mitkof Highway, 227
- Mitkof Island, 223
- Molotov, Premier Viacheslav, 166
- Moose, 31, 91, 150, 240
- Moose Creek, 89, 138
- Moose Pass, 240
- Mosquitoes, 33-34, 114
- Mountain Village, 253, 281
- Mountains of Alaska, 23, 26, 28, 29, 30, 31, 38, 44, 89, 91, 116, 222-223, 224, 230, 231, 232, 238, 251, 257, 260
- Mount McKinley National Park, 29, 86
- Muir Glacier, 225
- Mules, 111
- Municipalities, 197
- Museum, Territorial, 227-228
- Musk oxen, 32, 252
- Muskrat, 149
- Mussels, 128
- Nabesna, 269, 280
- Nabesna Road, 269, 280
- Naknek, 250
- Naknek River, 249
- Napakiak, 253
- Napamute, 253
- Napaskiak, 253
- National Federation of Federal Employees, 205, 209
- National forests, 67, 68, 71, 155, 215-218, 232, 234, 240, 244
- National Park Service, 173-174, 287
- National Resources Planning Board, 99, 284
- "Natives," 49, 51-52, 61, 117, 145, 148, 175, 181, 200, 203, 237, 250, 251-254, 256-258, 261, 263, 286
- Navy, 9, 146, 168, 199, 245, 249, 257-258
- Near Islands, 247
- Negroes, 141
- Nelson Island, 253
- Nenana, 193, 238, 252, 264, 267, 278, 282
- Nenana coal field, 143-145, 219, 236
- Nenana Ice Pool, 20, 46
- Newcomers, Alaska attitude toward, 8, 12
- Newhalen, 243
- Newspapers, 195, 202, 211
- Newsprint, 73
- New York Alaska Company, 268
- Nichols, Jeanette P., 285
- Nickel, 139
- Nikolski, 249
- Ninilchik, 102, 110, 240
- Nizina River, 185
- Noatak, 258, 281
- Noatak River, 19
- Nome, 14, 16, 19, 34, 39, 51, 56, 81, 131, 136, 142, 168, 169, 170, 193, 194, 195, 198, 202, 206, 208, 209, 255, 256, 279, 281, 282, 283
- Nondalton, 243, 281
- Non-metallic minerals, 139-140
- Non-resident seasonal workers, 51, 61, 119, 122, 250
- Noorvik, 258
- Norman Wells, N.W.T., 145, 146, 161, 213, 275
- Northern Alberta Railway, 162
- Northern Commercial Company, 177
- "Northern Lights," 45
- North Pacific region, 25, 221
- Northway, 193, 267, 280
- Northwest Staging Route, 25, 28, 271
- Northwest Territories, 271, 272, 274, 275, 276
- Norton Sound, 30, 251, 254
- Nulato, 70, 261, 262, 265
- Nunachuk, 253
- Nunapitchuk, 253
- Nunivak Island, 250, 252, 253
- Nurses, 102, 180, 203
- Nushagak River, 249
- Nyac, 268
- Ocean currents, 18
- Oculists, 179
- Ohagamute, 253
- Oil fields, 146-147, 218-219, 232, 246, 257-258, 272-273, 275-276
- Old-age assistance, 204
- Old Harbor, 245
- OPA, 207
- Ophir, 268
- Ophir Creek mining district, 256
- Opportunity for Minor Wood Product Industries in Alaska*, 286

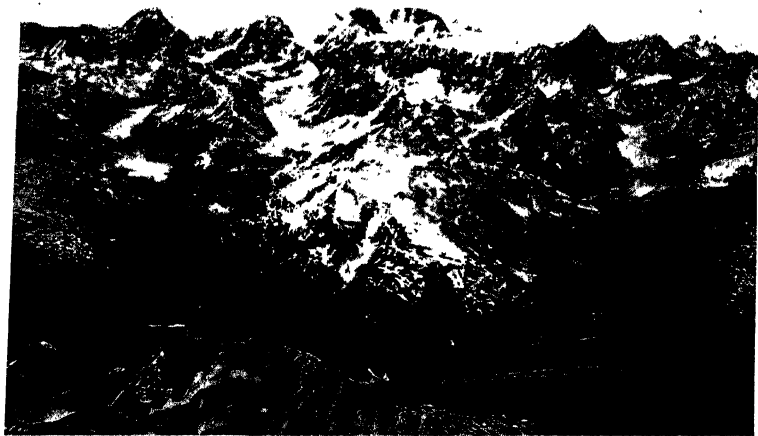
- Optometry, 179; Territorial Board of, 180
- Otter, 149
- Ouzinkie, 245
- Oysters, 128
- Pacific Northwest, relationship of Alaska mineral resources to industrial development in, 139, 140
- Pacific Ocean, 13, 17, 19, 37, 39, 130, 230, 248
- Pack horses, 110-111
- Pack ice, in Arctic Ocean and Bering Sea, 19, 250-251, 255, 258
- Paimute, 253
- Palmer, 87, 88, 89, 97, 102, 112, 195, 201, 202, 237, 241, 242, 278, 280
- Pan American Airways, 168, 255
- Paramushiro, 14
- Passage Canal, 235, 238
- Pasture and grazing, 90, 95, 110, 113, 116, 216-217, 241-242
- Pavlof, 247
- Paxsons, 269, 280
- Peace River, B.C. and Alta., 164, 271, 272-273, 274, 275
- Peat, 182
- Pedro Bay, 243
- Peel River, 271
- Pelican City, 124, 229
- "Permafrost," 44, 85, 156, 160-161, 255, 257
- Perryville, 247
- Pests, 32-34, 109
- Petersburg, 51, 70, 151, 155, 156, 158, 192, 193, 195, 202, 206, 208, 209, 223, 227, 281
- Petroleum resources, 145-147
- Petrov, Ivan, 58, 284
- Pharmacy, Territorial Board of, 180
- Photoengraving plants, 178
- Pilot Point, 250
- Pilots, marine, 26
- Pioneers' Home, 204
- Platinum, 138, 252
- Platinum (town), 138, 254
- Pogromni, Mount, 29
- Point Barrow, 15, 16, 36, 109, 145, 257, 258, 279; oil field, 146
- Point Hope, 258, 283
- Point Lay, 258
- Politics, 191, 197, 198
- Pollen counts, 34
- Poorman, 264
- Popof, Mount, 29
- Population, 48, 210; characteristics of, 48-52; distribution of, 19, 157; educational attainment of, 200; foreign-born in, 48; of Anchorage, 237; of Fairbanks, 11; of Matanuska Valley, 89; of Railroad Belt, 81; sparseness of, 51; turnover in, 51
- Porcupine River, 263
- Portage, 278
- Port Alexander, 156, 229
- Port Clarence, 27, 256
- Port Graham, 240
- Portland Canal, 23, 138, 229
- Portlock, 240
- Potash, 183, 219
- Potatoes, 80, 82, 86, 90, 95, 96, 109
- Potter, Jean, 285
- Poultry, 82, 86, 94, 95, 96, 97
- Power (see Hydroelectric power resources)
- Pribilof Islands, 49, 54-55, 110, 250, 253
- Prince George, B.C., 27, 160, 161, 168, 273
- Prince of Wales Island, 72, 123, 223, 229
- Prince Rupert, B.C., 158, 161, 224, 279
- Prince William Sound, 61, 67, 72, 126, 127, 129, 233-236
- Problem of Alaskan Development, The*, 99
- Prospecting, 132, 141-142, 213, 217
- Ptarmigan, 32, 149
- Public assay offices, 142
- Public Roads Administration, 155, 286
- Public Survey Office, 286
- Public Welfare, Territorial Department of, 204
- Pulp mill possibilities, 15, 68, 71, 72-75, 140
- Purse seining, 121
- Queen Charlotte Islands, 131
- Quincy Adams, Mount, 29
- Rabbits, 97; snowshoe, 32, 149
- Radio, 52, 178
- Radioville, 37
- Railroad Belt, 81, 236-238

- Railroad to Alaska, 27, 160-161
 Railways, 27, 29, 62, 72, 81, 86, 113, 144, 156, 157, 158-161, 165, 224, 235-238, 240, 252, 261, 264, 266, 278, 287. (See Alaska Railroad)
 Rainfall, 36-41, 46-47, 83, 85, 87, 88, 92, 282; effect of latitude on season of, 41-42
 Rampart, 84, 100, 264, 281
 Rapids, 269, 280
 Rationing, 193, 207
 Rat Islands, 247
 REA lines, 91, 101, 242
 Reading, popular pastime in Alaska, 52, 177, 202
 Ready-mix concrete plant, 186
 Reconstruction Finance Corporation, 142
 Redoubt, Mount, 29
 Reindeer, 32, 57, 117, 252, 256, 257
 Rents, 208-209
 Resurrection Bay, 239
 Retail stores, 176-177
 Revillagigedo Island, 223
 Richardson Highway, 165, 234, 266, 268-270, 280
 Riggs, Tom, 110
 River drainages, 18-19, 260
 Rivers, freezing of in winter, 20, 262
 Roadside enterprises, 11, 173, 174
 Roads, need of in Alaska, 93, 239
 Rocky Mountains, 25, 28
 Rocky Mountain Trench, 25-27, 160
 Romig, Dr. J. H., 179
 Roosevelt, President F. D., viii, 9, 198
 Rotary clubs, 11, 211
 Ruby, 70, 193, 262, 263, 264, 283
 Russia and Russian influences on Alaska, 4, 10, 14, 15, 21, 24, 28, 44, 49, 53, 55, 59, 110, 166-167, 223, 228, 245, 248, 258
 Russian Mission, 253
 Russian River, 185, 239, 240
 Sablefish, 129
 St. Elias, Mount, 29, 231, 232
 St. Elias Range, 28, 230, 231
 St. George, 253
 St. George Island, 252, 253
 St. Lawrence Island, 250, 252, 253
 St. Michael, 39, 252, 254, 264
 St. Paul, 253
 St. Paul Island, 39, 110, 252, 253
 Salary differential for Federal Government employees, 180
 Salmon, fishing, canning and marketing of, 55, 57, 60, 61, 118-122, 226, 249-250; found in Arctic waters, 131, 256; life cycle of, 119; methods of catching, 120-121; oil and meal, 122-123; profit possibilities in packing, 122; size of, 120; species caught in Alaska, 119-120; taxation of industry, 196; value of annual pack, 122
 Sanak, 127, 247
 Sand Point, 247
 Sanford, Mount, 29
 Savoonga, 253
 Sawmills, 61, 69-70, 159, 226, 227
 Saxman, 227
 Scallops, 128
 Scheelite, 138
 Schools, 102, 180-181, 196, 200-202
 Schwatka, Lt. Frederick, 23
 Sealing, 54-55, 252-253
 Sea otters, 55, 248
 Seasonality of activities in Alaska, 46, 51, 59-61, 70-71, 119, 135, 154, 156, 210, 250
 Seattle, 14, 15, 19, 59, 81, 87, 96, 107, 157, 163, 168, 169, 174, 175, 179, 194, 195, 206, 279, 281
 Seaweed, 183
 Security, importance of Alaska to national, 9-10
 Seguam Island, 247
 Selawik, 258
 Seldovia, 70, 102, 129, 156, 202, 240, 279
 Semichi Island, 247
 Semisopchnoi Island, 247
 Service clubs, 11, 211
 Service industries, 175-181
 Service stations, 173
 Settlers' rates on household goods, 107
 Seward, 51, 70, 155, 176, 193, 195, 202, 206, 208, 209, 236, 240, 278, 279, 281, 282, 283
 Seward Peninsula, 44, 137, 138, 254-256
 Seward, Secretary Wm. H., vii, 21, 54, 58
 Shageluk, 253
 Shaktolik, 253

- Sharks, 130-131
 Sheep, 16, 95, 115-117; mountain, 31, 150
 Shelikof Strait, 243
 Shellfish, 56, 127-129
 Shingles, 70, 72
 Shipping, 19, 26, 58, 60, 157-158; costs, 77, 79, 96, 157, 176, 186, 193, 205, 210
 Shishaldin, Mount, 29
 Shishmaref, 256
 Shonbeck, A. A., 113
 Shrimp, 128, 227
 Shumagin Islands, 17, 110, 127, 246
 Shungnak, 258, 281
 Silver, 137-138
 Sitka, 22, 36, 37, 38, 51, 53, 54, 56, 70, 100, 110, 156, 192, 195, 204, 206, 208, 209, 223, 228-229, 279, 281, 282
 Sitka National Monument, 229
 Sitka Sound, 229
 Sitkalidak Island, 111, 112
 Situk River, 231
 Size, of Alaska, 13, 16, 222; of farms, 94
 Skagway, 18, 37, 38, 70, 156, 158, 159, 192, 202, 208, 223, 224, 228, 266, 278, 279, 282, 283
 Skeena Highway, 161
 Skiing, 174
 Skilak Lake, 239
 Slana, 269, 280
 Slana-Tok cut-off, 161, 213, 269, 280
 Slave River, 271
 Sleetmute, 138
 Smaller War Plants Corporation, 174, 187
 Smith, Dr. Philip, 133, 285
 Snakes, absence of, 32
 Snowfall, 20, 38, 40, 41, 224, 235, 269
 Social security, 204-205
 Soils, 89, 91-92
 Soil Conservation Service, 103
 Solomon, 256
 Songbirds, 33
 South-Central Alaska, 18, 28, 37-39, 113, 155, 185, 282
 Southeast Alaska, 13, 15, 17, 18, 20, 22, 24, 28, 30, 36, 37-39, 45, 46-47, 60-61, 67, 72, 73, 74, 78-79, 114, 125, 127, 128, 129, 130, 138, 139, 151, 155, 158, 170, 178, 182, 183, 184, 185, 192, 193, 221-230, 282
 Souvenirs, opportunities in the manufacture of, 186
 Sporting-goods stores, 177
 Spurr, Mount, 29
 Squaw Harbor, 247
 Standard Oil Company (Alaska), 145-146
 Statehood, 192, 197, 199-200, 221
 Steamboats, 157, 252, 261, 267
 Steamship lines, 107, 157-158, 165, 172, 252, 281
 Steel Creek, 264
 Steese Highway, 165, 264, 266, 269, 270, 280
 Stevens Village, 262, 264
 Stewart, B.C., 229
 Stikine River, 224, 227
 Stony River, 253
Story of Alaska, The, 284
 Strawberries, 97, 108, 228
 Strawberry Point, 229
 Stuyahok, 253
 Sugar maples, 185
 Sulphur, 140
 "Sun-dogs," 45-46
 Sunrise, 240
 Suntrana, 238
 Susitna, 243
 Susitna River, 18
 Susitna Valley, 44, 78, 91, 98, 100, 102, 113, 241, 242, 283
 Sutton, 237, 242
 Takotna, 268
 Taku River, 224
 Talkeetna, 87, 238
 Talkeetna Mountains, 89, 112, 113, 241
 Tanaga Island, 247
 Tanana, 40, 193, 261, 266, 281, 282
 Tanana Crossing, 193, 267, 280, 283
 Tanana River, 20, 28, 83, 86, 238, 263, 264, 265, 266, 267
 Tanana Valley, 36, 40, 44, 56, 69, 78, 81, 83-87, 90, 91, 94, 95, 100, 103, 112, 186, 265-267
 Tanana Valley Farmers Association, 98
 Tanunak, 253
 Tatitlek, 236
 Taxes, 195-197, 199, 207
 Taxidermists, 184-185
 Taxis, 179, 193

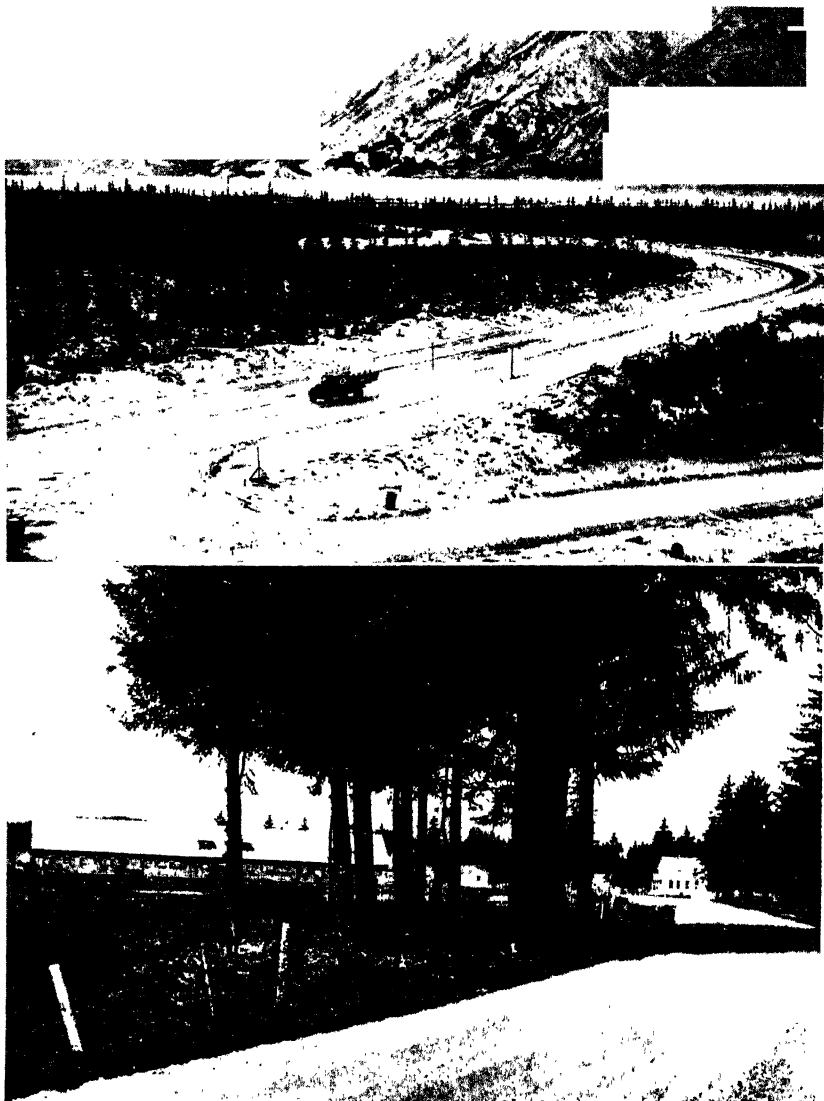
- Teachers, 180-181
 Telegraph Creek, B.C., 224
 Telegraph service, 54, 178, 194
 Telephones, 178, 194
 Teller, 256, 281, 283
 Temperature, 36-42, 84, 88, 92, 282
 Tenakee, 229
 Teslin, Y.T., 274, 280
 Theaters, 154, 178
 Thunderstorms, 40; absence of, 41
 Tides, 17, 242-243, 248, 251
 Tielke River, 185
 Timber sales, 217
 Timber treatment, 72
Time magazine, 171, 211
 Time zones, 14
 Tin, 139, 256
 Tin City, 256
 Tlingit Indians, 49
 Tokeen, 140
 Tok Junction, 269, 280
 Tolovana River, 269
 Tongass Highway, 226
 Tongass National Forest, 67, 73, 226, 232
 Totem poles, 23, 227, 229
 Tourists, 12, 60, 61, 163, 171-174, 186
 Trade with Alaska, 59-60
 Transportation, 157-173, 223-224, 278-281
 Trapping, 60, 61, 148-150, 152, 250, 253, 256
 Travel permits, 212-213
 Travel to and in Alaska, 171-174, 212-213; costs of, 173, 193, 207-208, 281
 Trawling, 128, 130
 Treadwell Mine, 228, 274
 Treasurer, Territorial, 197
 Tremolite, 140
 Trolling, 121
 Trout, 33, 240, 250
 Truck farming, 89, 90, 92, 97
 Trucking, 96, 161, 163, 165-166
 Trunk and luggage manufacture, 186
 Tsimshian Indians, 49
 Tsina River, 185
 Tuberculosis, 155, 203
 Tuluksak, 253
 Tuluksak River, 268
 Tundra, 30-31, 250, 255, 257, 259-260
 Tungsten, 139, 142
 Tunnels, 62, 160, 235
 Turnagain Arm, 17, 93, 235, 238, 239, 242
 Tustumena Lake, 239
 Tyonek, 243
 Ugashik, 122, 250
 Ugashik River, 249
 Umnak Island, 16, 57, 115-116, 247, 281
 Unalakleet, 253, 281
 Unalaska, 249, 279, 281
 Unalaska Island, 16, 110, 247, 248
 Unemployment Compensation Commission, 205
 Unga, 247
 Unimak, 248
 Unimak Island, 247, 248
 United Air Lines, 168
 United States Commissioners, 198
 United States Smelting, Refining and Mining Company, 137, 144
 University of Alaska, 45, 100, 101, 107, 151, 155, 181, 201-202, 227, 242, 267, 286
 Unuk Valley, 117
 Upholstering concerns, 186
 Uranium, 274
 Utilities, 178, 197
 Valdez, 38, 42, 115, 161, 193, 195, 202, 208, 233, 235, 268, 269, 279, 280, 281, 282, 283
 Valley of Ten Thousand Smokes, 246
 Vancouver, B.C., 161
 Vancouver, Capt. George, 26, 225
 Vancouver, Mount, 29, 231
 Vegetative cover, 23, 28, 30-31, 67-69, 94, 224-225, 233-234, 244, 251, 255, 259-260, 266, 272, 273
 Veniaminof, Mount, 29, 246
 Veterans, appeal of Alaska to, 6, 187; assistance for, 187; hospital for, 155; preference to in land entry, 104, 213-214
 Veterans' Bureau, 187, 287
 Veterinarian, Territorial, 102
 Vitamin oils and products, 122-123, 129, 130-131
 Volcanoes, 29-30, 140, 245
 Wainwright, 258
 Wales, 256

- Walker, Ernest P., 285
 Wallace, Henry, 166
 War, effect of on Alaska, 3, 5, 10, 48-49, 61-62, 116, 133-135, 153, 159, 211, 285
 War Manpower Commission, 122
 War Production Board, 133
 Wasilla, 89, 102, 104, 242, 280
 Waterfowl, 32, 248, 251, 257
 Watson Lake, Y.T., 28, 171, 274, 275, 280
 Weather Bureau, 45, 46, 88, 99, 287
 Weeds, 109
 Well-driller, 185-186
 Whaling, 53-54, 57
 Whiskey, 59, 177
 Whitehorse, Y.T., 28, 145, 161, 164, 165, 166, 168, 171, 173, 223, 224, 228, 261, 264, 267, 273, 275, 276, 278, 280
 White Mountain, 256
 White Pass and Yukon Route, 159, 224, 261, 264, 278
 Whittier, 70, 72, 87, 159, 193, 235-236, 278
 Wholesaling, 177
 Wickersham, Judge James, 284
 Wildflowers, 31, 257
 Wildlife, 31-33, 91, 114, 148-150, 151, 152, 240, 244-246, 256, 257, 260
 Willkie, Wendell, 198
 Willow, 280
 Willow Creek mining district, 237
 Wind, absence of, 40
 Winter feed, problems in producing, 92, 111, 113, 114, 116
 Wiseman, 265, 282
 Wolves, 32-33, 149-150
 Women, lack of in Alaska, 50-51; opportunities for, 180
 Woody Island, 245
 Wool production, 16, 57, 116
 Wrangell, 51, 70, 154, 156, 158, 192, 195, 202, 208, 223, 227, 279
 Wrangell Highway, 227
 Wrangell Institute, 227
 Wrangell Island, 223
 Wrangell, Mount, 29
 Wrangell Narrows, 156, 227
 Yakataga, 232; oil field, 147, 219, 232
 Yakutat, 37, 38, 169, 231, 232, 279, 281, 282, 283
 Yakutat Bay, 230
 Yakutat Southern Railroad, 231, 232
 Yellowknife, 274
 Yukon River, 18-19, 20, 23, 31, 36, 84, 86, 160, 251, 252, 253, 254, 259, 260-265, 270, 272; flats, 260, 262
 Yukon Valley, 36, 40, 56, 69, 78, 79, 84, 102, 180, 250
 Yukon Territory, 18, 24-25, 223, 228, 271, 273, 274, 275, 276
 Yunaska Island, 247



Top. Glaciers discharge into tidewater in Glacier Bay National Monument. The vertical range in this scene is 15,300 feet, from sea level to the top of Mt. Fairweather.—*Photo by U.S. Forest Service.*

Bottom. The decaying totem of an ancient civilization overlooks the quiet waters of Southeast Alaska, a paradise for the motorboatman.—*Photo by U.S. Forest Service.*

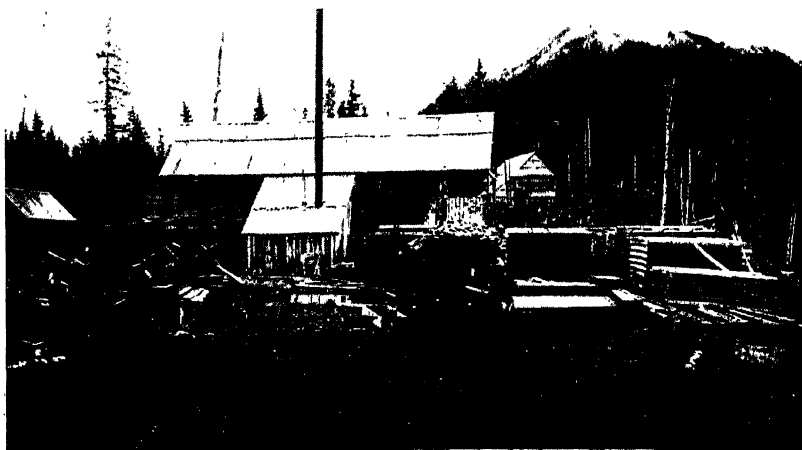


Top. The Alaska Highway in winter. This is at Lake Kluane in Yukon Territory, 165 miles northwest of Whitehorse.—*Lu Liston Photo.*

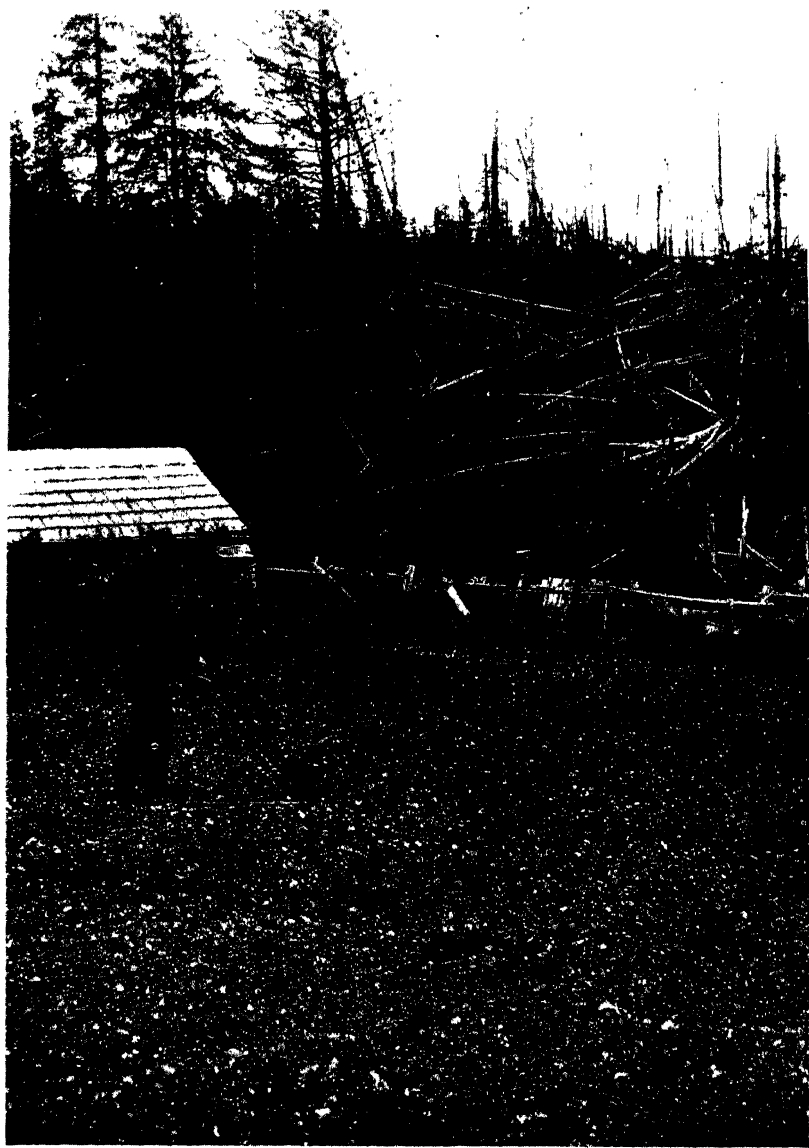
Bottom. Approaching a dairy farm on the Glacier Highway out of Juneau. By Alaska standards, this is excellent road.—*Photo by courtesy of Public Roads Administration.*



A typical Southeast Alaska stand of Sitka spruce and western hemlock being cruised by forest officers.—*Photo by U.S. Forest Service.*



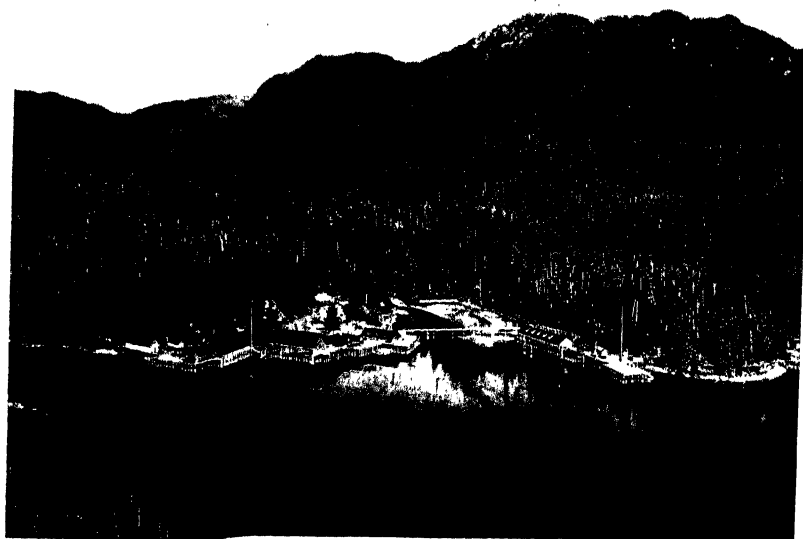
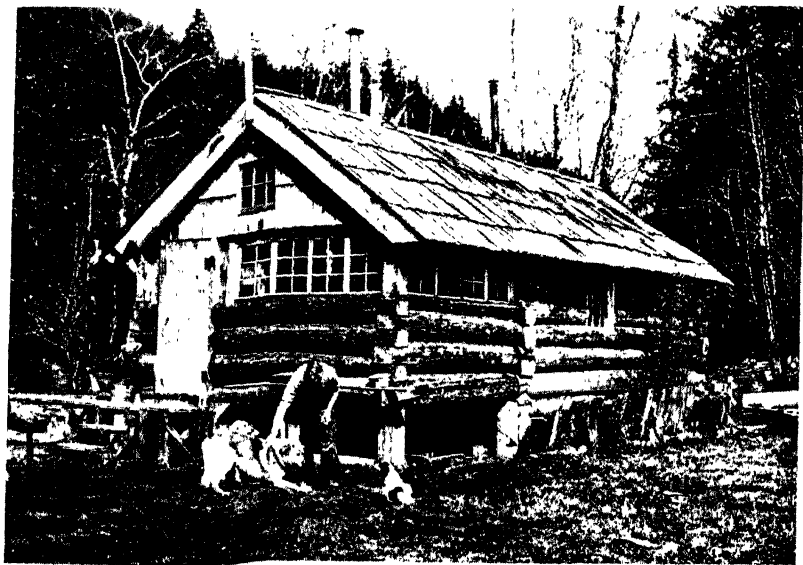
Top. A small portable sawmill in interior Alaska.—*Photo by U.S. Forest Service.*
Bottom. Agricultural land in the Tanana Valley. The University of Alaska is on the hilltop beyond the cultivated fields, while the edge of the city of Fairbanks shows at the very top of the picture.



The settler in Southeast Alaska faces a real job in clearing land. The original condition of this plot is indicated by the forest tangle in the background.—*Photo by U.S. Forest Service.*



Not Switzerland, but Alaska. Dairy stock grazing on grass flats before Mendenhall Glacier, near Juneau.—*Photo by U.S. Forest Service.*



*Top. A typical homesteader's cabin.—Photo by U.S. Forest Service.
Bottom. A typical Alaska salmon cannery.—Photo by U.S. Forest Service.*



Top. Most of the salmon canned in Alaska are caught in traps, from which they are collected by scows such as this one, which holds about 30,000 fish.—*Photo by U.S. Forest Service.*

Bottom. Salmon trolling boats in the harbor at Ketchikan.—*Photo by U.S. Forest Service.*



Top. Alaska is the skier's paradise. This is the Douglas ski bowl.—*Photo by U.S. Forest Service.*

Bottom. Aerial view of Wrangell.—*Photo by U.S. Forest Service.*

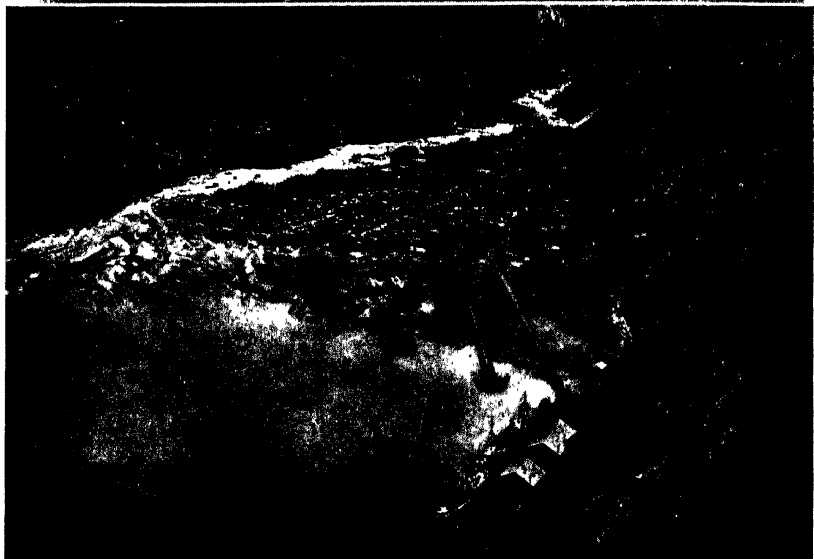


There is still gold to be panned from the creeks, in the manner of this old prospector, but most of the mining of placer deposits in Alaska is done by efficient modern dredges.—*Photo by U.S. Forest Service.*



Top. Sitka, which was the historic capital of Russian America.—*Photo by U.S. Forest Service.*

Bottom. The lights of Juneau, the capital, shine through the bright summer night and reflect in Gastineau Channel. Mill of the Alaska Juneau Gold Mining Company at right.—*Winter and Pond copyrighted photo.*



Top. The town of Haines, right, with the new through route to interior Alaska leading along the inlet into the distance. At left is Chilkoot Barracks, until 1940 the only military establishment in Alaska.—*Photo by U.S. Forest Service.*

Bottom. Skagway, port of entry for the gold rush of 1898 and the Alaska Highway rush of 1943.—*Photo by U.S. Forest Service.*

